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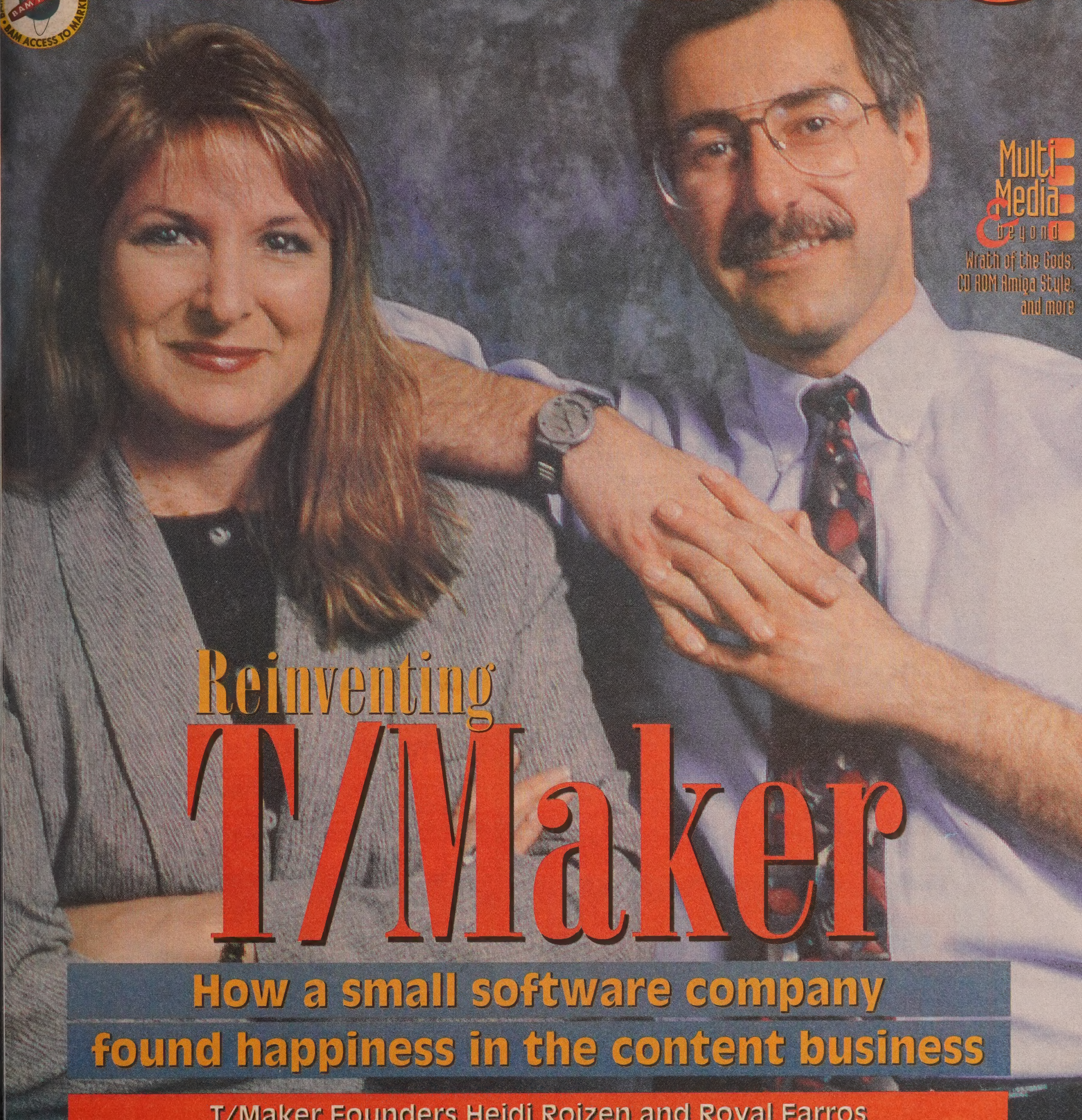

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T/Maker Founders Heidi Roizen and Royal Farros

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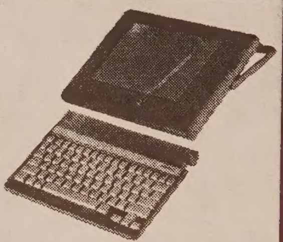

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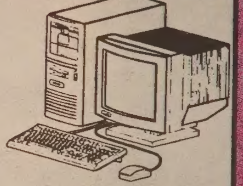

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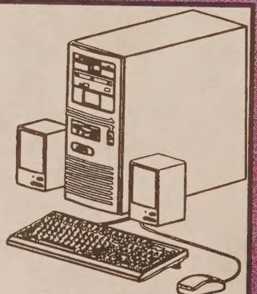

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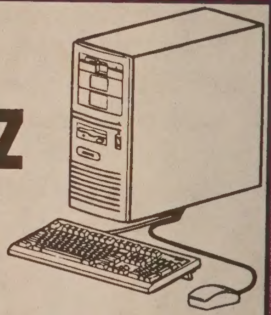

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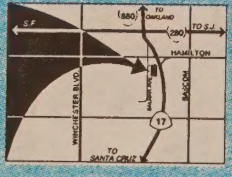
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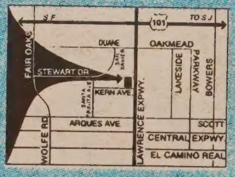
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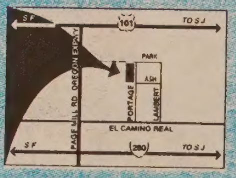
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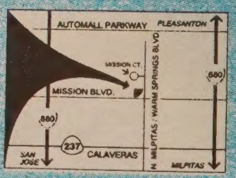
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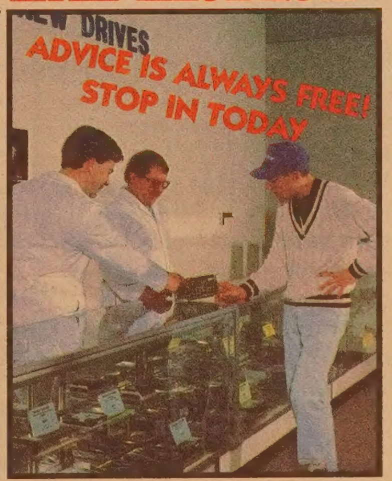

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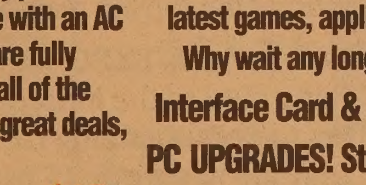

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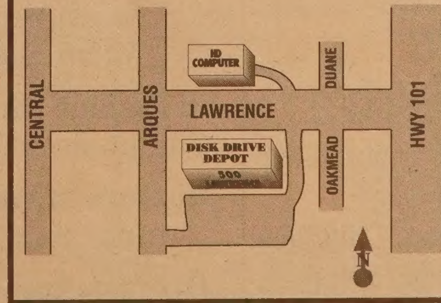

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A NOTE FROM THE EDITORS

We live in interesting times, which are reflected in various ways this issue.

Our cover story is a return to T/Maker (last profiled in 1988), a small, independent company in Mountain View that's successfully reinventing itself in an industry climate completely different from the one in which it was a start-up.

At the fourth Computers, Freedom & Privacy conference in Chicago last month, the spotlight was on the growing conflict between the rights of individuals and the role of government in the digital age. A luckless White House representative and a lawyer for the NSA tried to convince a varied and skeptical crowd that government control of cryptography was somehow a Good Thing; meanwhile, in their search for fugitive criminals Kevin Mitnick and wooden-legged "Agent Steal," the FBI erroneously arrested one unfortunate attendee whose name happened to resemble one of Mitnick's aliases and interrogated two others, including ex-Marine and CIA veteran Robert David Steele of Open Sources. Science fiction writer and *Hacker Crackdown* author Bruce Sterling delivered the closing address, which is reprinted in this issue.

And finally, as *MicroTimes* prepares for its tenth anniversary next month, our parent company, BAM Publications, has changed its name, about which we've got more to say on page 12.

The adventure continues…

—ME

Micro Marketplace

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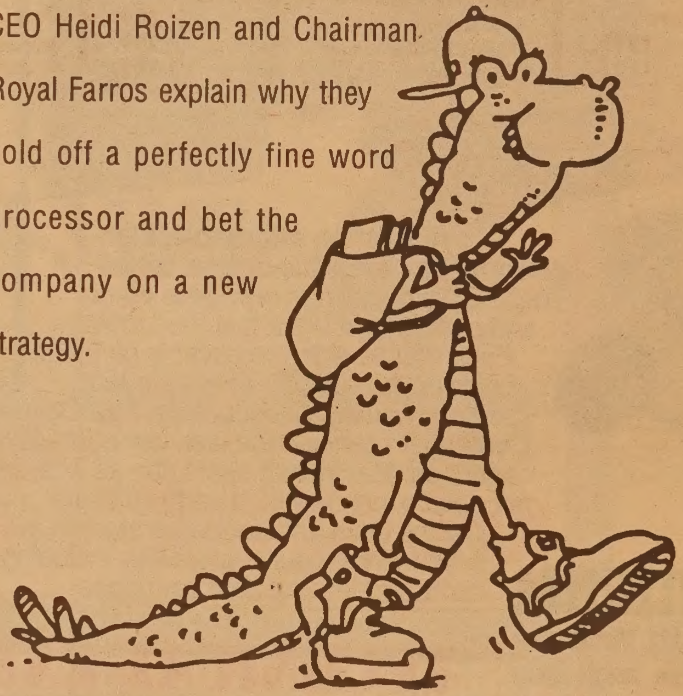
CEO Heidi Roizen and Chairman Royal Farros explain why they sold off a perfectly fine word processor and bet the company on a new strategy.



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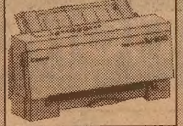

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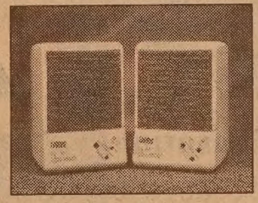

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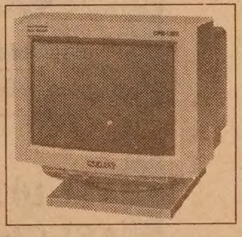

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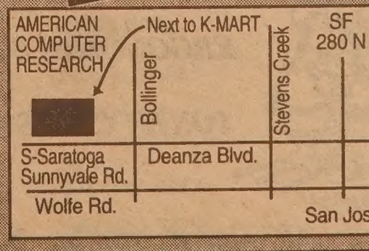

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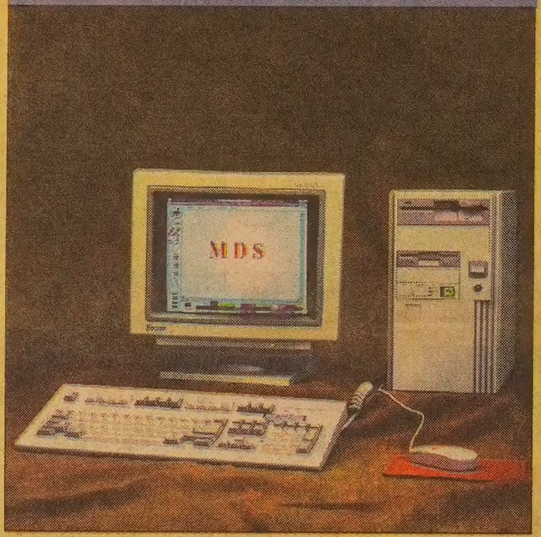

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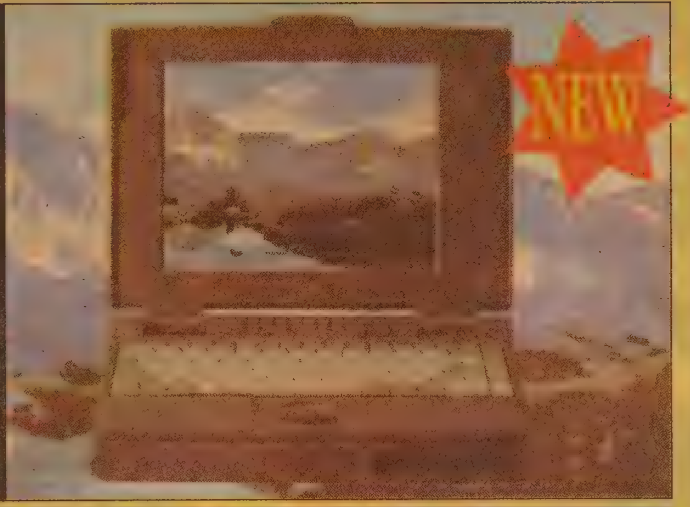

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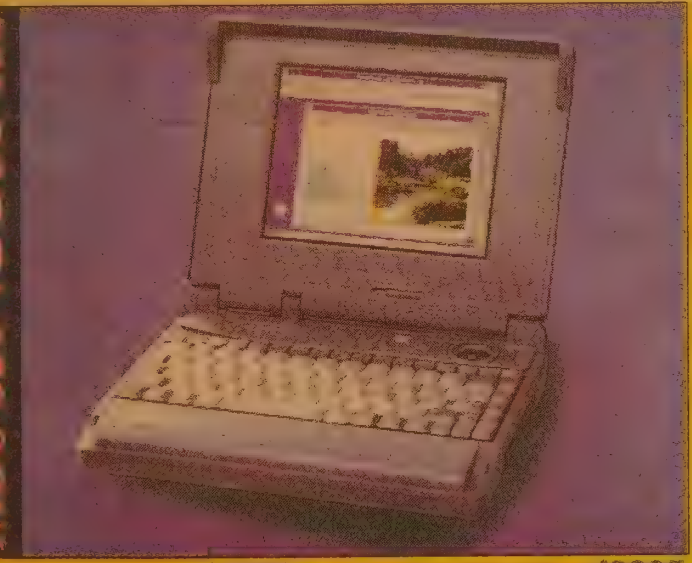

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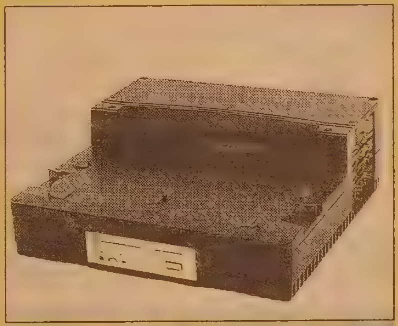

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Becoming BAM Media

Some years ago, in the days when I was free-lancing for *BAM*, I arrived one afternoon at the funky old converted house in Oakland that then served as Corporate HQ, intending to turn in a story. At the receptionist's desk were two little golden-haired girls, busily creating art with whatever materials came to hand.

"Hi, I'm Laney. I'm 5," said the older one. "This is Darcy. She's 3. Aunt Sally will be back in a minute. Do you have a green pen?"

As we dealt with the matter of the green pen, Laney continued, "When I was a baby, I used to sleep in a basket in my daddy's office..."

Eventually Aunt Sally (Sally Engelfried, then the *BAM* receptionist, bass player for the band Yo, and indeed aunt to the kids) returned, I turned in my story and departed, amid many pleasantries from Laney and Darcy. Some months later, I found that their daddy was the big boss, Dennis Erokan.

Cut to the Bammies this past March. There I am at the video monitor contemplating some anomaly when up comes a gorgeous babe in a slinky black dress. "Have you seen my dad?" inquires the babe. I stare at her blankly.

"It's *me*!" she says with plaintive impatience. "*Darcy!*"

Something of the sort has happened to the company, as reflected by our new name of BAM Media and the space-age logo that adorns our covers. We're bigger. We look different. We do quite a few things we didn't do in the olden days.

But we're still us.

BAM's first spinoff was *MicroTimes*, first published in May 1984. It was followed by our car magazine *DRIVE!*, then *San Francisco Downtown*. Just this month, we welcome our newest addition, *Home Improvement & Design*. Each magazine reflects our time-honored philosophy of Always Free, and brings a unique blend of useful resources, both advertising and editorial, to its particular audience.

Almost from the beginning, we've also done things that weren't magazines—the Bammies (Bay Area Music Awards) are a classic example. Coming real soon now is a whole new venture for us—CyberBAM, our cool new music forum on Apple's eWorld online service.

Time passes, things change. The company's about ten times the size it was when I first started free-lancing. When we finally popped out of the last of our funky converted houses in Oakland a couple of years ago, we were forced to move to Real Office Space. Despite oft-expressed fears at the time that we were doomed to Go Corporate, we seem to have come through with our spirit of adventure and sense of opportunity intact.

Meanwhile, Laney, now 16, works here after school. Aunt Sally has recently returned from outside exploits to co-edit the company newsletter.

And, although Dennis's kids are long past that sort of thing, we've still got a baby sleeping in the office. Chloë Laine Dorton, aka The BAMbina, holds court at the workstation of her mom, artist Renée Alborelli, when she's not being carried around the building by some employee taking a mental health break from the pressures of deadline.

We're looking forward to future endeavors as BAM Media. We hope you'll stay with us as we find out what's next.

—*Mary Eisenhart*

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INDUSTRY INSIGHT

Microcode, Power Macs, And Mergers

AMD Wins Right to Use Intel Microcode Legally

BY PAUL HOFFMAN

In a sharp rebuke to Intel, a federal court jury decided that Advanced Micro Devices can legally continue to copy Intel's CPUs under a 1976 agreement. The agreement, which expires in 1996, allows AMD to be a "second source" for Intel's CPUs.

> **Michael Slater, publisher of the widely read *Microprocessor Report*, says, "Intel's strategy appears to be one of burying its competitors in litigation: even if Intel ultimately loses, as it has with regularity lately, Intel benefits from the uncertainty it creates in the market and the drain on its competitors' resources."**

At the time that the agreement was signed, it was standard industry practice for major suppliers like Intel to allow another, smaller company to make the same CPUs. This arrangement helped reassure chip buyers who worried that the larger company would not keep up with demand or, worse, would drop the line of chips for more interesting ones in future years. Intel had tried to get out of the contract by saying that "microcomputers" in the contract didn't refer to the CPU chips

This is the second time the case was tried; the first time, AMD lost. However, the judge in that case decided that Intel withheld important internal documents that would have helped AMD's case. In fact, the jury in the current case took less than ten hours to come to a unanimous verdict in favor of AMD.

Copyright © 1994 by Paul Hoffman. All rights reserved. Paul Hoffman is an industry analyst who has been covering microcomputer technology for fifteen years. He also writes popular computer books and is the president of Proper Publishing. He can be reached at phoffman@netcom.com.

As expected, Intel will appeal the verdict. And Intel will continue separate lawsuits against AMD that are related to this one but rest on different disagreements. Those suits still put a damper on some computer manufacturers' desire to buy AMD chips, but the current case should relieve most of their concerns.

The victory for AMD was a costly one: AMD estimates that its legal fees, lost time, and associated court costs for this case hover near $100 million, a staggering amount for a company AMD's size. Many speculate that Intel, being many times larger than any of the clone makers, is using lawyer costs to reduce the profitability of its competitors. Michael Slater, publisher of the widely read *Microprocessor Report*, says, "Intel's strategy appears to be one of burying its competitors in litigation: even if Intel ultimately loses, as it has with regularity lately, Intel benefits from the uncertainty it creates in the market and the drain on its competitors' resources."

AMD's president Jerry Sanders made it clear that AMD will not rest on its laurels after winning the case. AMD will continue to develop Intel clones that do not rely on the disputed license because the license is only good for two more years. For example, AMD has so far decided not to clone the Pentium processor, probably due to its large manufacturing cost. Instead, AMD will design better clones of Intel's 486 line, which should sell well for at least the next five years.

APPLE SHIPS POWER MACS

The much-anticipated Power Macs, Macintosh computers based on the PowerPC RISC CPUs, were released in a storm of publicity and advertising unmatched in Apple's history. Power Macs are the first easily affordable computers based on powerful RISC processors that run common applications.

Apple was well prepared at the introduction, having prepared its software and hardware developers for over a year so that the new systems were completely compatible with the current Macintoshes. The new systems have been selling briskly, although there are a few complaints about Apple's marketing of them as Windows-compatible.

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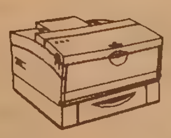

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As Novell integrates its networking with these mainstream applications,
it will certainly challenge Microsoft, which has failed to make much headway in the network market.

The Power Macs come in three series. The 6100s have the same physical characteristics as the Quadra 610: a low, flat system unit designed for compactness. The 7100s resemble the Quadra 650: taller than the 6100s with room for a few expansion boards and drives. The 8100s are akin to the Quadra 800s: tower-shaped systems that will be mostly used as workgroup servers.

Although they physically resemble the Quadra series, the new Power Macs are significantly faster for only a small amount of money more than their Quadra counterparts. For example, the Power Mac 7100/66 runs typical business and graphics programs two to four times faster than a Quadra 650. However, those speeds will go up even more when the manufacturers of those programs produce PowerPC-specific versions of the programs. It is estimated that spreadsheet and graphics programs will gain another doubling in speed when they are converted to the PowerPC.

Apple's extensive efforts to make sure current software ran with the PowerPCs paid off: only a few programs, mostly fax software, didn't work. (An interesting side note: Fax software written for Windows 3.1 rarely works under Windows NT. What is it with fax software that makes it so unportable?) The vast majority of programs work just fine, and the number of reports of bugs is phenomenally low, even after weeks of new users trying everything on their systems. Most dealers report that Mac users who came to see the new systems were impressed with their speed and low cost.

Probably the darkest spot on the Power Mac marketing is Apple's claim that the Power Macs can run programs that were written for Microsoft Windows. This claim is only vaguely true. In order to even try this feat, you need 16MB of RAM, adding about $600 to the price of the system. Even with all that RAM, you need SoftWindows, a program that is only included if you buy the system with the 16MB; otherwise it costs about $400. However, SoftWindows is so slow as to be almost unusable. On a 7100, SoftWindows runs Windows programs about as fast as a 20MHz 386SX system, which is barely tolerable for most programs. For example, Microsoft Word for Windows is essentially unusable at that speed.

Apple's fixation on pretending that the Power Macs are Windows-compatible will probably come back to haunt it when corporate buyers realize that they've been had. Instead, Apple could have spent the time and money coming up with a workable, inexpensive plug-in board that has a 486SX CPU and 4MB of RAM. For essentially the same cost as the additional 12MB you need to run Windows exceptionally slowly, you could have a real Windows and Mac in a single box. Apple would then not be in the position of lying about what you can really do with their otherwise remarkable systems.

MEGA-MERGERS IN THE SOFTWARE INDUSTRY: WHERE DO THEY LEAVE THE USERS?

March was the month that the PC and Macintosh software industry shifted, but it is not clear where it shifted to.

First, Aldus and Adobe Systems agreed to merge their operations, making a single desktop publishing giant with annual sales expected to be about $500 million. A week later, industry giant Novell bought word processing powerhouse WordPerfect and, at the same time, bought the rights to Borland's popular Quattro Pro spreadsheet. Novell will in one fell swoop become a company with almost $2 billion in sales, behind only Microsoft.

In fact, Microsoft's name came up almost as often as those who were merging as the news spread. In the case of the Aldus and Adobe merger, the big question was whether the new larger company could keep Microsoft out of the mainstream of the publishing and drawing package market. Microsoft has dabbled at the low end of both markets, but has so far kept away. On the other hand, Microsoft Word now can perform most of the tasks that only a few years ago required PageMaker or its competitors. In the case of the Novell-WordPerfect acquisition, it is obvious that Novell is putting itself up directly against Microsoft by buying the leading word processor and a leading spreadsheet. As Novell integrates its networking with these mainstream applications, it will certainly challenge Microsoft, which has failed to make much headway in the network market.

Both mergers have started to worry users of the four company's products. Whenever two companies merge, it is hard to tell how the current customers will fare. In the case of Aldus and Adobe, there is definite product overlap in the high-end drawing package arena, with Adobe Illustrator and Aldus Freehand, and in the photo-retouching market, with Adobe Photoshop and Aldus PhotoStyler. It is likely that two of those four packages will be dropped in the next two years, although it is not clear which. The most likely outcome is that the users of the dropped packages will be offered a low-cost "side-grade" to the one that wins. However, the packages have different interfaces, and the users of the dropped packages will be forced to learn a new program, probably one that they already rejected.

There is little overlap for users in the Novell-WordPerfect purchase, so that won't be as much of an issue. However, Novell and WordPerfect have very different styles of customer support due to their very different products. WordPerfect has gained a reputation for its superb customer support; Novell provides more support through its dealers. Because the companies are located close together, it is likely that Novell will continue to use the current WordPerfect support staff. However, Novell may also choose to cut back the staff if the merged company does not make good profits in the short run. Given Microsoft's great strides in the word processing market, this could seriously hurt the combined company. It is also not clear how Novell will support its new Quattro Pro spreadsheet.

A clear winner in the Novell-WordPerfect merger is Borland. It sold its Quattro Pro line to Novell for $145 million, money that it sorely needs to prop up its ailing database line. Borland has been hurting ever since it bought Ashton-Tate, and it has been so late with new Windows-based dBASE that it lost significant market share. Borland has long been known for its programming tools, and it is expected to more closely link its programming and database tools later this year.

Borland will lay off approximately two thousand people due to its troubles, but it will be in significantly better shape after the sale of Quattro Pro. That sale was for approximately twice Quattro Pro's annual sales, making it a very profitable sale for Borland. With the sale of Quattro Pro, Borland acknowledges that it will probably never be one of the top software companies in terms of sales, but it can still do well in its main markets of database and programming tools.

Of course, in both of those markets, it still has to compete with the mammoth Microsoft. ■

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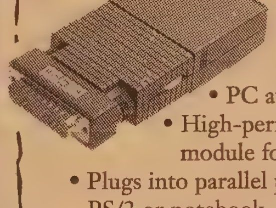

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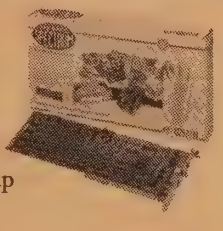

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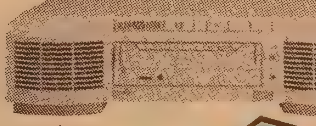

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AVALANCHE OF SELL-ORDERS PUMMELS DOW, LOCAL STOCKS FOLLOW SUIT

For the monthly period ended April 5, the Dow Jones Industrial Average tumbled 156.89 points, or 4.09%, before closing at 3675.41.

Despite favorable economic news, including the highest level of consumer confidence in four years, record corporate profits, moderate inflation, and steady job growth, investors pulled out of the market all month, concentrating instead on rising interest rates.

Sell-orders were ignited by the Federal Open Market Committee, which increased short-term interest rates for the second time in as many months. Increasing interest rates make fixed-income securities more attractive as opposed to stocks.

The MicroTimes Stock Index followed the Dow's plunge, as it fell 203.49 points, or 4%, before ending matters at 4878.26.

Sun Microsystems, Inc., the world's largest maker of computer workstations, fell $7.13 per share, or 24.26%, before closing at $22.25 per share. The company announced that third-quarter revenue will not meet analysts' expectations of $1.4 billion. Analysts at Merrill Lynch & Co., PaineWebber Inc., and S.G. Warburg & Co. all downgraded their rating to "neutral" from "above average," "unattractive" from "above average," and to "add" from "buy," respectively.

Advanced Micro Devices (AMD), Inc. said first-quarter net income jumped 38%, largely due to increased sales of its clone of Intel Corp.'s 486 chips. The company earned $84.6 million, or $0.85 a share, in the first quarter, up from $61.5 million, or $0.63 a share, a year ago. W.J. Sanders III, chairman and chief executive officer of AMD, said, "Improving yields and shorter cycle times enabled AMD to increase unit volumes of Am486 microprocessors more rapidly than expected early in the quarter." AMD shares soared $6.88 per share, to close at $30.25.

Microsoft Corp. was raised to "buy" from "hold" by Hancock Institutional Equity Services analyst Ben Rose. Rose estimates Microsoft to earn $3.70 per share for the year ending June 30, 1994, $4.30 a share in fiscal 1995, and $4.90 a share in fiscal 1996.

In other news, Microsoft signed an agreement with Nippon Telegraph & Telephone to develop multimedia networks in Japan. The companies will work on a software system that will allow users of multimedia networks to gain access to the necessary information. Shares of Microsoft were up $6.75 per share, before closing at $87.75.

Commodore International, Inc., the Pennsylvania-based maker of Amiga computers used in the home entertainment market, announced a second-quarter loss of $8.2 million, or $0.25 a share, compared to a year-earlier loss of $77.2 million, or $2.33 per share. Commodore said it is talking to creditors to seek corporate restructuring. The home entertainment concern closed at $0.75, down $2.50 per share, or 76.92%. ■

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 03/04/94	CLOSING PRICE 04/05/94	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE											
OTC	Adobe		ADBE	28.25	26.25	-2.00	-7.08	22	0.20	0.76	37.00	16.25
OTC	Aldus		ALDC	23.00	29.00	6.00	26.09	41	0.00	0.00	34.50	13.50
OTC	Autodesk	(H)	ACAD	60.00	58.13	-1.88	-3.13	23	0.48	0.83	61.75	37.00
OTC	Borland		BORL	13.38	13.69	0.31	2.34	25	0.00	0.00	27.25	12.00
OTC	Informix		IFMX	23.75	21.00	-2.75	-11.58	25	0.00	0.00	27.25	13.38
OTC	Lotus		LOTS	73.38	72.00	-1.38	-1.87	59	0.00	0.00	86.50	23.50
OTC	Microsoft		MSFT	81.00	87.75	6.75	8.33	26	0.00	0.00	98.00	70.38
OTC	Novell	(L)	NOVL	24.25	18.38	-5.88	-24.23	–	0.00	0.00	33.75	16.75
OTC	Oracle		ORCL	34.13	33.31	-0.81	-2.38	41	0.00	0.00	37.75	15.88
OTC	Software Publishing		SPCO	6.63	7.13	0.50	7.55	–	0.00	0.00	9.25	5.50
OTC	Symantec		SYMC	15.00	16.88	1.88	12.50	–	0.00	0.00	20.50	10.88
	HARDWARE											
OTC	Apple		AAPL	36.75	33.50	-3.25	-8.84	–	0.48	1.43	59.13	22.00
OTC	AST Research		ASTA	24.00	21.63	-2.38	-9.90	–	0.00	0.00	33.00	12.75
NYS	Commodore	(L)	CBU	3.25	0.75	-2.50	-76.92	–	0.00	0.00	5.00	0.75
NYS	Compaq	(H)	CPQ	98.88	100.88	2.00	2.02	19	0.00	0.00	104.88	43.13
NYS	Digital Equipment		DEC	30.88	29.75	-1.13	-3.64	–	0.00	0.00	48.25	27.75
OTC	Dell		DELL	27.25	27.75	0.50	1.83	–	0.00	0.00	34.50	13.50
NYS	Hewlett-Packard		HWP	89.00	82.25	-6.75	-7.58	16	1.00	1.22	93.63	64.38
NYS	IBM		IBM	52.63	53.38	0.75	1.43	–	1.00	1.87	60.00	40.63
NYS	Silicon Graphics	(H)	SGI	25.25	23.63	-1.63	-6.44	31	0.00	0.00	26.88	12.88
OTC	Sun Microsystems		SUNW	29.38	22.25	-7.13	-24.26	12	0.00	0.00	32.63	21.13
NYS	Xerox		XRX	97.50	97.50	0.00	0.00	–	3.00	3.08	103.25	69.88
NYS	Tandy		TAN	41.63	36.50	-5.13	-12.31	15	0.60	1.64	50.75	28.13
	CPU'S											
NYS	Advanced Micro Devices		AMD	23.38	30.25	6.88	29.41	12	0.00	0.00	32.88	16.75
OTC	Intel		INTC	69.63	68.75	-0.88	-1.26	13	0.20	0.29	74.50	42.75
NYS	LSI Logic	(H)	LSI	21.25	20.50	-0.75	-3.53	19	0.00	0.00	23.00	10.50
NYS	Motorola	(H)	MOT	104.75	104.63	-0.13	-0.12	29	0.56	0.54	109.75	68.63
	COMMUNICATIONS											
NYS	AT&T	(L)	T	51.38	52.00	0.63	1.22	18	1.32	2.54	65.00	50.13
NYS	BellSouth Corp.		BLS	55.00	57.00	2.00	3.64	27	2.76	4.84	63.88	50.63
OTC	MCI		MCIC	25.63	23.13	-2.50	-9.76	21	0.04	0.17	29.88	22.13
NYS	Northern Telecom		NT	30.63	27.88	-2.75	-8.98	–	0.36	1.29	38.63	21.38
NYS	Pacific Telesis	(L)	PAC	31.59	31.38	-0.22	-0.69	–	2.16	6.88	59.25	31.38

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	11
DECLINES	20
UNCHANGED	1
NEW HIGHS	5
NEW LOWS	4

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Advanced Micro Devices	$ 6.88
LARGEST DOLLAR LOSER	Sun Microsystems	$ -7.13
LARGEST PERCENTAGE GAINER	Advanced Micro Devices	29.41 %
LARGEST PERCENTAGE LOSER	Commodore	-76.92 %

	CLOSE 03/04/94	CLOSE 04/05/94	NET CHANGE IN PERIOD	PERCENT CHANGE IN PERIOD
MICROTIMES STOCK INDEX	5081.75	4878.26	-203.49	-4.00
DOW JONES INDUSTRIAL AVERAGE	3832.30	3675.41	-156.89	-4.09
STANDARD & POOR'S 500 INDEX	464.74	448.29	-16.45	-3.54
N.Y.S.E. COMPOSITE	257.70	248.41	-9.29	-3.60
NASDAQ COMPOSITE	790.55	750.95	-39.60	-5.01

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01/07/94	4866.50	3820.77
02/04/94	4728.74	3871.42
03/04/94	5081.75	3832.30
04/05/94	4878.26	3675.41

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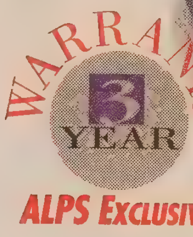

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Seeking *Universal* Computer-Assisted Political Power

BY JIM WARREN

We now have global online access to comprehensive state legislative information, free of state charges or use restrictions, and other records may soon become similarly available (see sidebar). But "only" 850,000 to 1.5 million or more of California's thirty-one million population currently use the Internet—at least until the rest of 'em park their gasoline horses and start fume-free electronic commuting.

So how can all those other folks be kept apprised of what Sacramento's about to do to 'em? Here's a business and civic-service opportunity:

CIVIC FAX SERVICES

Set up a customized fax service that automatically scans all legislative information, daily, for words and phrases that clients specify as being of interest. When it gets a "hit," have it automatically fax-modem a copy of the goodies to all clients known or believed to be interested in the issue. These can be fee or free clients—community leaders, political irritants, reporters, concerned local agencies, about-to-be-gored businesses and labor groups, and so on.

REALIZABLE FANTASIES

Copyright © 1994 by Jim Warren; email/jwarren@well.sf.ca.us; 345 Swett Rd., Woodside, CA 94062. Permission herewith granted to copy-in-full for any nonprofit use.

This idea was prompted by email from someone identified only as "aflgeorge."

TOLL-FREE GLOBAL FAXING

To offer more access at less cost, set up a network of computers strategically located around the state—or world—that are connected to the Internet and also equipped with fax-modems. These can be tiny, relatively dumb machines that do no more than receive text and faxing instructions, transmit the faxes as instructed, and return a message verifying transmission results (fax number, date, time, message, success or failure).

These already exist here and there—the start of net-based bypasses around phone monopolies' golden toll-booths. This uses the functionally free Internet to transport messages from the originator's computer to some cooperating machine within local dial-up distance of the destination fax unit.

Sadly, some of the implementations have a user interface that's even worse than DOS or UNIX, requiring the email address to be the fax-number digits in reverse order, separated by periods. Vista points on the information highway that clearly need beautification.

A *humane* design would be to "address" the email fax to the full phone number at a generic fax site, e.g., *country-area-number@faxsite.net* . Hyphens or periods in the fax number should be optional but acceptable—since customs differ from nation to nation. No doubt the builders of network message-routers will *love* this idea. (The principle is to make computers convenient for people, not vice-versa.)

And the fax message, when sent, should allow the fax header-line that is normally generated by the sending fax machine to be specified by the original sender—probably the "Subject" line of the email message.

VOICE-MAIL VARIATION

Noting that the fax fantasy can be used for anything, let's return to the more narrow issue of computer-assisted political power. Net-based faxing still doesn't give universal access, since most folks don't have fax machines. So how to serve those handicapped citizens who are both modem- and fax-impaired?

Use an auto-dialer and a voice-synthesis unit, connected to the net like the strategically located fax modems. Have it automatically send entirely automated, limited messages and alerts to interested clients who request such notifications—e.g., "saying" the bill number of legislation that has been introduced or amended that concerns specified topics of interest, or perhaps telling the dates and times when hearings are scheduled for the topic(s), and giving a voice-phone number to call for more information.

LET FOLKS HAVE FED FEC FILES

More on computer-assisted voters' access to important political information:

The Federal Elections Commission (FEC) receives campaign disclosures and other filings by federal elected officials in paper form. They key-enter and key-verify some summary information, in-house, then ship the forms to a contractor in Virginia to have all of the information keyboarded—perfectly and totally error-free, of course—into a computer format, which is then shipped back to the FEC.

The wasteful costs of this process justify the FEC charging $20 per connect-time-hour for online computer access to their computerized public records—access for those who are wealthy enough and involved enough to afford the price of finding out who paid how much for whom. The data is also available on magtape—for a healthy fee, of course.

Mere citizens and low-caste voters who can't or don't want to pay premium fees for modern access can get turgid mounds of pre-landfill copies—eventually—for a copying fee. Or for free, they can look at the paper records—in the FEC's office in the Center of the Known Universe (Washington, DC). Paper copies for elected federal representatives are also eventually available in the state secretary of state's office (in the state capitol) and/or usually at one or two of the county clerks or registrars of voters offices in the representatives' district.

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FEC records are already computerized. Copies-on-pulp are already filed with state and local filing agencies. So let's have the FEC offer at least those local agencies free, timely, online access via the *nonproprietary* Internet to its *computerized* files.

Then those service-oriented local agencies can, in turn, cascade timely data out to the folks who most need it and are most affected by it—the voters—in print and electronic form. Distribution via library computers, civic networks, K-12 schools, colleges and universities, computer-equipped community organizations, voter-employing businesses, and so on.

O' course, the FEC *could* make all of the information available directly to fifteen to twenty-five million net-connected citizens via the public nets—like the 1993 Office of Management and Budget's Circular A-130 *mandated* for most federal agencies.

How to make this happen: Fax or write your Congress creatures (representative, senators), asking that they immediately introduce legislation permitting and requiring the FEC to offer all states' secretaries of state and all counties' clerks and voter registrars

(1) online access to all computerized Federal Elections Commission public records,

(2) without charge by the FEC or by any other federal agency,

(3) access that is as timely as any other online access that the FEC provides, and

(4) without restriction on further free dissemination of the data, by the state and local agencies receiving it.

Notice this says "all" of the files, not just those pertaining to the local or state agency's jurisdiction. Why? Because everyone is impacted by the votes of all federal representatives. Why else do some representatives and senators receive as much as 80–90% of their campaign loot from outside of their districts? (This is also the constitutional rationale for not prohibiting such out-of-district patronage purchases.)

Be sure to ask your "representatives" what, explicitly, they will do on this matter. Say you will widely distribute their (non)responses across their district—to your associates, community groups, political reporters, newspaper editors, online forums, etc. And do so.

Send copies of your request to local political reporters. Send separate, brief letters-to-the-editor to local newspapers describing your request. (Less-than-wealthy newspapers would *love* to have better access to political disclosures.)

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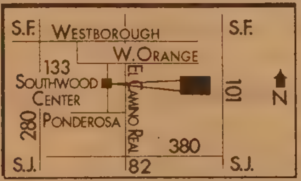

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But the libraries themselves are poor. "Poor," hell—they're broke! And there are no politically irresistible librarians' unions donating tens of millions of dollars to politicians and ballot campaigns to assure that libraries get a fair chunk of the tax patronage. What they get, they get because most politicians *are* well meaning and *do* care for libraries' well-being and public service.

So let's give new meaning to "PC"—"political correctness" worth doing: Offer your perfectly good, but unacceptably old PCs and Macs to your local library, along with last year's modems and last rev's software.

They may be too old for us techno-elite, or too slow to download those important color GIF files. But libraries can use 'em to provide powerful on-ramps to the nation's data highways for those who must otherwise limp along on pre-landfill ex-forests: the information-impaired, ill-equipped to knowledgeably participate in crucial community decision making (e.g., in the voting booth).

THE HORSE'S MOUTH

I'll be speaking about "Computer Software and Patent Issues" during the April 22 Patent-Office-at-Stanford conference at Stanford Law School; "Electronic Public Access to Government" before San Francisco's Commonwealth Club, May 5th at 5 pm. (415-597-6700); about civic networking in Apple's "Building Community Computing Networks," May 4-6 in Cupertino (sadly, already sold out); and, at the June 17th Peninsula CivicNet '94 Symposium (see sidebar). ■

Warren organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991), was one of the first to receive the Electronic Frontier Foundation Pioneer Award (1992), led the recent successful effort to make state legislation and statutes available via the public nets without state charge, and received the James Madison Freedom-of-Information Award from the Society of Professional Journalists, Northern California (1994).

He founded InfoWorld, *Wireless Digital, Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics & statistics. He has been a computer professional since 1968, and was a mathematics teacher and professor for ten years before that. He is also an outside member of Autodesk's board of directors and, among other things, formulated their policy statement strongly opposing the patenting of software.*

A Herd Of
ACTION ALERTS!
Support Needed To Open Public Records

Four bills in the California Legislature need widespread public support (copies of latest bill text is available from the bill authors, and online via ftp from leginfo.public.ca.gov). All have a good chance of passage in this election year, *if* they receive extensive support from individuals and organizations.

Assembly Bill 2524, Bowen, access to computerized local public records. Last year, Assembly Member Debra Bowen's AB 1624 blew open the Legislature's computerized public records for public access without state fees via the nonproprietary computer nets. Now she wants computerized local-agency public records to be available to the public in computerized form, for no more than "fees covering the direct costs of duplication..." Many agencies currently stonewall requests for computer copies of their computerized public records. Even worse, some local agencies with and without private-sector monopoly partners are charging huge mark-ups for modern/computerized copies —limiting access to those wealthy enough to afford them. Widespread public pressure is needed to overcome profiteers' whines. Send support letters to Bowen, fax (916)327-2201, and to your own legislators. Voice calls to Aide Mary Winkley, (916)445-8528.

Assembly Bill 2451, Bates, online access to state public records. Assembly Member Tom Bates has introduced legislation modeled after Bowen's AB 1624, to make computerized executive branch state public records available without state fees via the Internet, just as legislative branch records are now available. With enough public pressure, it appears that Bates can override state agencies' probable opposition (some make big bucks selling computer copies). Send support letters to Bates, fax (916)445-6434, and to your own legislators. Aide Rachel Richman, (916)445-7554.

Senate Bill 758, Hayden, computerized campaign-finance disclosures. More than a year ago, Sen. Tom Hayden introduced this campaign-reform bill. It was mostly gutted as it bounced through the legislative process. However—long before this alert appears—he will have amended it to authorize and mandate that political candidates and campaign committees receiving more than $10,000 per year must file their financial disclosures in computerized form, and mandate that the secretary of state make such electronic records available to the public. This needs as much public pressure in this election year as it can get. Send support letters to Hayden, fax (916)324-4823. Aide Daryl Young, (916)445-1353.

Assembly Bill 3575, Speier, computerized lobbyist disclosures. Last but not least, Assembly Member Jackie Speier has introduced this legislation as a companion to Hayden's bill, placing the same computerized-filing and computerized public-access requirements on state lobbyists' required disclosures as SB 758 places on campaign-finance disclosures. Pressure's needed to overcome shy lobbyists' opposition. Send support letters to Speier, fax (916)445-0511. Aide Elise Thurau, (916)445-8020.

Peninsula CivicNet '94 Symposium

An all-day symposium about computer-based community and civic networking on the San Francisco Peninsula will be held at the College of San Mateo in San Mateo on Friday, June 17. Presentations will be tutorial and organizational rather than primarily technical—for interested citizens and those who are creating or planning computer-based community services. Topics will include current and planned and possible Peninsula civic-nets, services, problems, benefits, opportunities, etc.

At this too-early press deadline, event sponsors include community groups, libraries, schools, and county agencies. Warren Slocum, San Mateo County's assessor-clerk-recorder, and I, are cochairing the event.

For information or registration, contact Symposium Administrator Ruth Nagler, c/o Peninsula Library System, 25 Tower Rd., San Mateo, CA 94402; (415)345-1221 or (415)349-5538.

—Jim Warren, columnist & advocate

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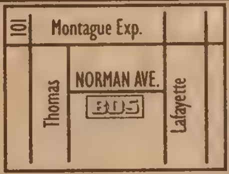

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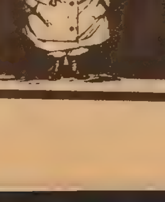

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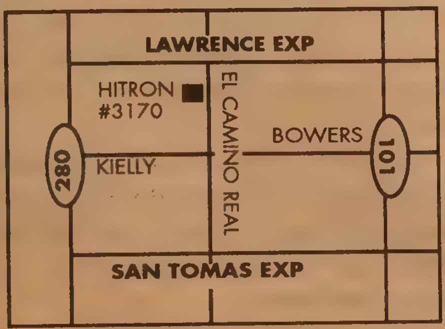

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Rumors Of War

Remarks At Computers, Freedom, And Privacy Conference IV

CHICAGO, MARCH 26, 1994

BY BRUCE STERLING

Sterling, author of much science fiction and also of The Hacker Crackdown, *was the closing speaker at this year's CFP conference. In addition to the usual unlikely and sometimes uneasy fraternization of hackers, law enforcement, security experts, politicians, civil libertarians, and other interested parties, this year's conference included some unscheduled excitement, notably the early-morning hotel-room arrest by the FBI of a hapless attendee whose real name happened to resemble an alias of fugitive computer criminal Kevin Mitnick. (When the man's fingerprints eventually showed him not to be Mitnick, he was released.)*

This talk followed a panel on encryption, in which University of Wisconsin professor George Davida described how Bobby Ray Inman, then of the National Security Agency, attempted to suppress his cryptography research, NSA General Counsel Stuart Baker made a valiant if condescending approach to shroud Clipper and Digital Telephony in a veil of Mom and Apple Pie, and David Banisar of CPSR basically declined to go along with his arguments.

I've been asked to explain why I don't worry much about the topics of privacy threat raised by this panel. And I don't. One reason is that these scenarios seem to assume that there will be large, monolithic bureaucracies (of whatever character, political or economic) that are capable of harnessing computers for one-way surveillance of an unsuspecting populace.

I've come to feel that computation just doesn't work that way. Being afraid of monolithic organizations, especially when they have computers, is like being afraid of really big gorillas, especially when they are on fire.

The threat simply doesn't concur with my historical experience. None of the large organizations of my youth that compelled my fear and uneasy respect have prospered. Let me just roll off a few acronyms here. CCCP. KGB. IBM. GM. AEC. SAC.

It was recently revealed that the CIA has been of actual negative worth—literally worse than useless—to American national security. They were in the pockets of the KGB during our death struggle with the Soviet Union—and yet we still won. Japanese zaibatsus—Japan Inc.—the corporate monoliths of Japan—how much hype have we heard about that lately? I admit that AT&T has prospered, sort of—if you don't count the fact that they've hollowed themselves out by firing a huge percentage of their personnel.

Suppose that, say, Equifax turned into an outright fascist organization and started abusing privacy in every way they could. How could they keep that a secret? Realistically, given current employment practices in the Western economies, what kind of loyalty could they command among their own personnel? The low-level temps have no health insurance and no job security; the high-level people are ready to grab their golden parachutes and bail at any time. Where is the fanatically loyal army of gray flannel organization men who will swear lifelong allegiance to this organization, or *any* organization in this country with the possible exception of the Mafia?

I feel that the real threat to our society isn't because people are being surveilled but because people are being deliberately ignored. People drop through the safety nets. People stumble through the streets of every city in this country absolutely wrapped in the grip of demons, groping at passersby for a moment's attention and pity and not getting it. In parts of the Third World people are routinely disappeared, not because of high-tech computer surveillance but for the most trivial and insane reasons—because they wear glasses, because they were seen reading a book—and if they survive, it's because of the thin thread of surveillance carried out by Amnesty International.

There may be securicams running twenty-four hours a day all around us, but mechanical surveillance is not the same as people actually getting attention or care. Sure, rich people, like most of us here, are gonna get plenty of attention, probably too much, a poisonous amount, but in the meantime life has become so cheap in this society that we let people stagger around right in front of us exhaling tuberculosis without treatment. It's not so much information haves and have-nots as watch and watch-nots.

I wish I could speak at greater length more directly to the topic of this panel. But since I'm the last guy to officially speak at CFP IV, I want to seize the chance to grandstand and do a kind of pontifical summation of the event. And get some irrepressible feelings off my chest.

What am I going to remember from CFP IV? I'm going to remember the Chief Counsel of NSA and his impassioned insistence that key escrow cryptography represents normality and the status quo, and that unlicensed hard cryptography is a rash and radical leap into unplumbed depths of lawlessness. He made a literary reference to *Brave New World.* What he said in so many words was, "We're not the Brave New World, Clipper's opponents are the Brave New World."

And I believe he meant that. As a professional science fiction writer I remember being immediately struck by the deep conviction that there was plenty of Brave New World to go around.

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I've been to all four CFPs, and in my opinion this is the darkest one by far. I hear ancestral voices prophesying war. All previous CFPs had a weird kind of camaraderie about them. People from the most disparate groups found something useful to tell each other. But now that America's premiere spookocracy has arrived onstage and spoken up, I think the CFP community has finally found a group of outsiders that it cannot metabolize. The trenchworks are going up and I see nothing but confrontation ahead.

Senator Leahy at least had the elementary good sense to backpedal and temporize, as any politician would when he saw the white-hot volcano of technological advance in the direct path of a Cold War glacier that has previously crushed everything in its way.

But that unlucky flak-catcher the White House sent down here—that guy was mousetrapped, basically. That was a debacle!

Who was briefing that guy? Are they utterly unaware? How on earth could they miss the fact that Clipper and Digital Telephony are violently detested by every element in this community—with the possible exception of one brave little math professor this high? Don't they get it that everybody from Rush Limbaugh to Timothy Leary despises this initiative? Don't they read newspapers? *The Wall Street Journal, The New York Times*? I won't even ask if they read their email.

That was bad politics. But that was nothing compared to the presentation by the gentleman from the NSA. If I can do it without losing my temper, I want to talk to you a little bit about how radically unsatisfactory that was.

I've been waiting a long time for somebody from Fort Meade to come to the aid of Dorothy Denning in Professor Denning's heroic and heartbreaking solo struggle against twelve million other people with email addresses. And I listened very carefully and I took notes and I swear to God I even applauded at the end.

He had seven points to make, four of which were disingenuous, two were half-truths, and the other was the actual core of the problem.

Let me blow away some of the smoke and mirrors first, more for my own satisfaction than because it's going to enlighten you people any. With your indulgence.

First, the kidporn thing. I am sick and tired of hearing this specious blackwash. Are American citizens really so neurotically uptight about deviant sexual behavior that we will allow our entire information infrastructure to be dictated by the existence of pedophiles? Are pedophiles that precious and important to us?

Do the NSA and the FBI really believe that they can hide the structure of a telephone switch under a layer of camouflage called child pornography? Are we supposed to flinch so violently at the specter of child abuse that we somehow miss the fact that you've installed a Sony Walkman jack in our phones?

Look, there were pedophiles before NII and there will be pedophiles long after NII is just another dead acronym. Pedophiles don't jump out of BBSes like jacks in the box. You want to impress me with your deep concern for children? This is Chicago! Go down to the projects and rescue some children from being terrorized and recruited by crack gangs who wouldn't know a modem if it bit them on the ass! Stop pornkidding us around! Just knock it off with that crap, you're embarrassing yourselves.

But back to the speech by Mr. Baker of the NSA. Was it just me, ladies and gentlemen, or did anyone else catch that tone of truly intolerable arrogance? Did the guy have to make the remark about our missing Woodstock because we were busy with our trigonometry? Do spook mathematicians permanently cooped up inside Fort Meade consider that a funny remark? I'd like to make an even more amusing observation—that I've seen scarier secret police agencies than his completely destroyed by a Czech hippie playwright with a manual typewriter.

Is the NSA unaware that the current president of the United States once had a big bushel-basket-full of hair? What does he expect from the computer community? Normality? Sorry pal, we're fresh out! Who is it, exactly, that the NSA considers a level-headed sober sort, someone to sit down with and talk to seriously? Jobs? Wozniak? Gates? Sculley? Perot—I hope to God it's not Perot. Bob Allen—okay, maybe Bob Allen, that brownshoe guy from AT&T. Bob Allen seems to think that Clipper is a swell idea, at least he's somehow willing to merchandise it. But Christ, Bob Allen just gave eight zillion dollars to a guy whose idea of a good time is Microsoft Windows for Spaceships!

When is the NSA going to realize that Kapor and his people and Rotenberg and his people and the rest of the people here are as good as people get in this milieu? Yes they are weird people, and yes they have weird friends (and I'm one of them), but there isn't any normality left for anybody in this society, and when it comes to computers, when the going got weird the weird turned pro! The status quo is *over!* Wake up to it! Get used to it!

Where in hell does a crowd of spooks from Fort Meade get off playing "responsible adults" in this situation? This is a laugh and a half! Bobby Ray Inman, the legendary NSA leader, made a stab at computer entrepreneurism and rapidly went down for the third time. Then he got out of the shadows of espionage and into the bright lights of actual public service and immediately started gabbling like a daylight-stricken vampire. Is this the kind of responsive public official we're expected to blindly trust with the insides of our phones and computers? Who made him God?

You know, it's a difficult confession for a practiced cynic like me to make, but I actually trust EFF people. I do; I trust them; there, I've said it. But I wouldn't trust Bobby Ray Inman to go down to the corner store for a pack of cigarettes.

You know, I like FBI people. I even kind of trust them, sort of, kind of, a little bit. I'm sorry that they didn't catch Kevin Mitnick here. I'm even sorry that they didn't manage to apprehend Robert Steele, who is about one hundred times as smart as Mitnick and ten thousand times as dangerous. But FBI people, I think your idea of Digital Telephony is a scarcely mitigated disaster, and I'll tell you why.

Because you're going to be filling out your paperwork in quintuplicate to get a tap, just like you always do, because you don't have your own pet court like the NSA does. And for you, it probably is going to seem pretty much like the status quo used to be. But in the meantime, you will have armed the enemies of the United States around the world with a terrible weapon. Not your court-ordered, civilized Digital Telephony—their raw and tyrannical Digital Telephony.

You're gonna be using it to round up wiseguys in streetgangs, and people like Saddam Hussein are gonna be using it to round up democratic activists and national minorities. You're going to strengthen the hand of despotism around the world, and then you're going to have to deal with the hordes of state-supported truck-bombers these rogue governments are sending our way after annihilating their own internal opposition by using your tools. You want us to put an axe in your

Continued on page 160

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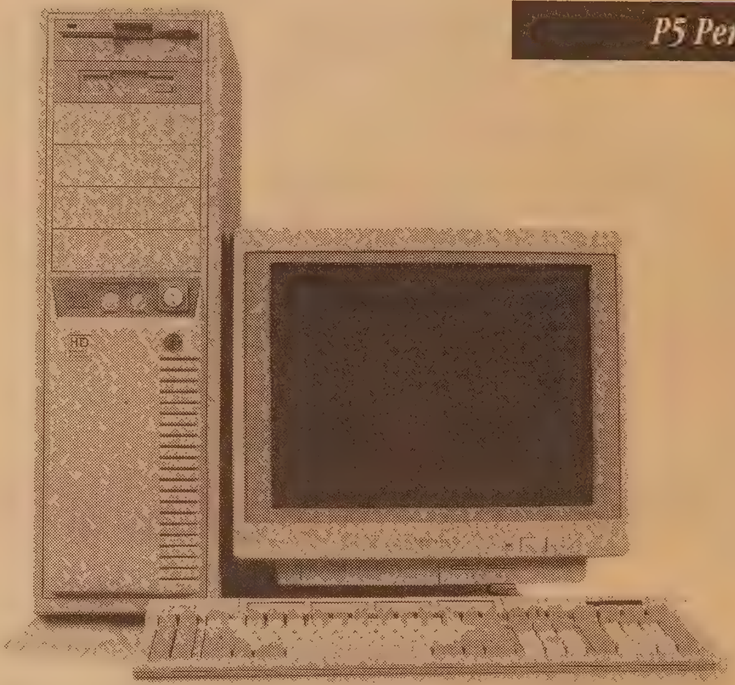

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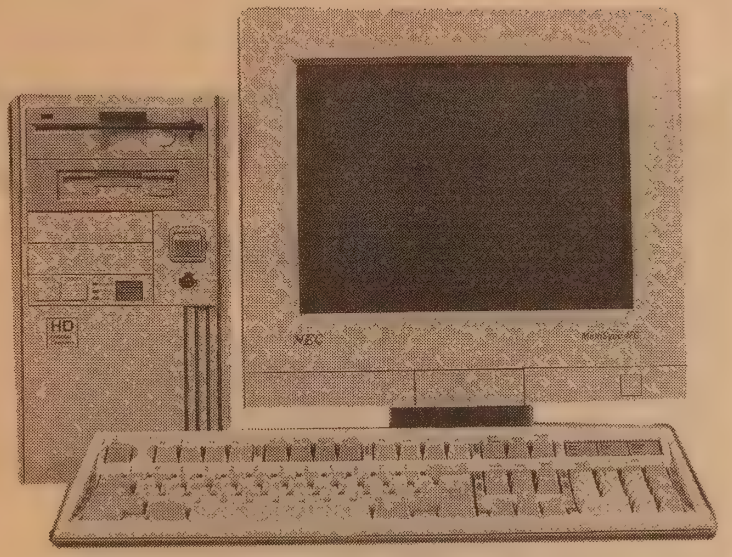

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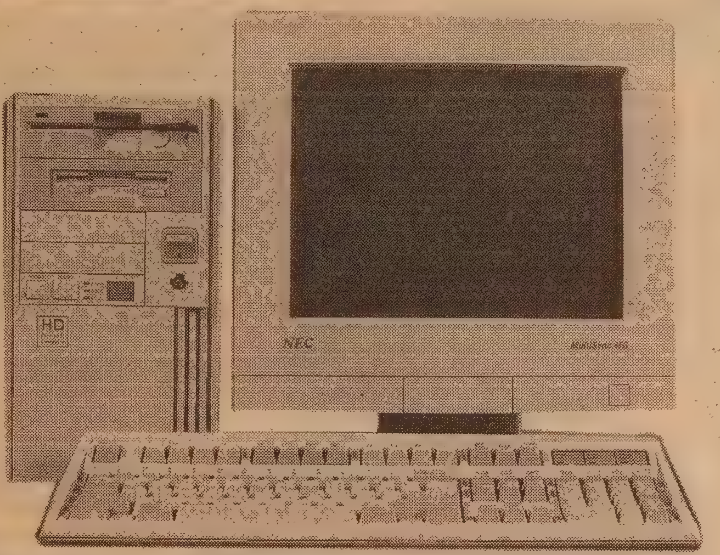

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NETWORK SYSTEMS

Design, Consultation, Installation, Trouble Shooting, Hardware & Software Configuration, Service & Support

HD Workstation

- *Desktop Case w/ 200W Power Supply*
- *Intel 486SX 25 Processor*
- *ISA/VESA Motherboard*
- *4MB RAM (Max 32MB)*
- *128K High Speed External Cache (Max 256K)*
- *TEAC 1.44MB Floppy Drive*
- *VESA Local Bus 32-bit Video Card/1MB*
- *14" Non-interlaced Monitor*
- *101 Enahnced Keyboard*
- *Microsoft Serial Mouse*
- *Free Mouse Pad*
- *NE-2000 Compatible Ethernet Card (Coax or 10Base-T)*

$875

Graphics, Engineering Workstation

- *Tower Case w/ 300W Power Supply*
- *Intel Pentium 66MHz CPU/16K Cache*
- *Pentium VLB Motherboard/512K Cache*
- *16MB Ram (Max 128MB)*
- *Teac 1.2MB and 1.44MB Floppy Drives*
- *1.0GB SCSI II Hard Disk*
- *Adaptec VLB SCSI II Controller Kit*
- *64-Bit VLB Windows Accelerator Card /2MB*
- *Toshiba Internal CD-ROM*
- *Viewsonic 20" Monitor*
- *Focus 9000 Keyboard*
- *Microsoft Serial Mouse*

HD File Server

- *Tower Case w/ 300W Power Supply*
- *Intel DX2-66 Processor*
- *EISA/VESA Motherboard*
- *8MB Ram (Max 256MB)*
- *256K High Speed External Cache (Max 1MB)*
- *Teac 1.2MB and 1.44MB Floppy Drives*
- *1.0GB SCSI II Hard Disk*
- *Adaptec 2742 EISA SCSI II Controller Kit*
- *VESA Local Bus 32-bit Video Card/1MB*
- *14" non-interlaced monitor*
- *101 Enhanced Keyboard*
- *Microsoft Serial Mouse*
- *Free Mouse Pad*

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With the extraordinary performance, HD Computer Systems allow you to race through heavy/intensive or demanding network environments. Accessing large amounts of data at high speed is the standard.

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Terms and conditions: *• 30 day money back guarantee • 1 year parts warranty • Major credit cards accepted • No surcharge for VISA, MC, AE and Discover Cards • Quality PO's accepted from Academic, Corporate and Public Institutions • APO's welcome • Shipping charge not refundable • Return shipments must be insured, prepaid and bear an RMA# on the shipping label • Price does not include shipping •.Price are subject to change without notice • Component warranties offers and claims are handled by the manufacturer • Components Compatibility is not guaranteed • No return on used items • All open returns are subject to 15% restocking fee • No exchanges or refunds on cd's will be replaced with the same item only... • Allow 14 days to process refund. • Not Responsible for typographical errors.*

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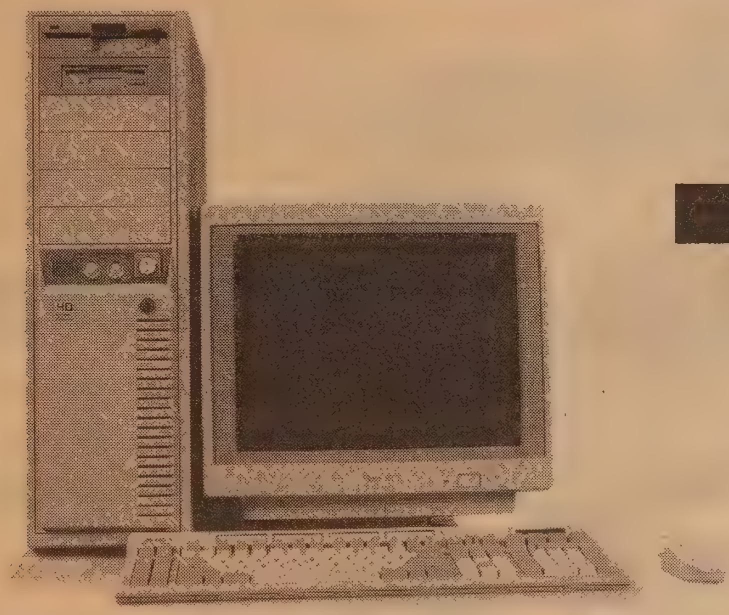

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Ethernet Adapters

- *DANPEX*

EN-2000B 16Bit BNC	*$65*
EN-2000BT 16Bit Combo	*$85*
EN-2000PB 16Bit Soft Set BNC	*$60*
EN-2000PT 16Bit Soft Set 10BT	*$60*
EN-2000P3 16Bit Soft Set Combo	*$75*
EN-6000B Pocket Lan BNC	*$137*
EN-6000T Pocket Lan 10BT	*$140*
EN-400I 4Port 10BT Hub Card	*$150*
EN-800A 8Port 10BT Hub	*$215*
EN-1212A 12Port 10BT Hub	*$485*

- *Accesories*

RG58 Coax Cable BNC 10'	*$8.00*
RG58 Coax Cable BNC 25'	*$10.00*
RG58 Coax Cable BNC 50'	*$13.00*
RG58 Coax Cable BNC 100'	*$25.00*
BNC Straight Adapter F-F	*$1.80*
BNC T Adapter F-M-F	*$3.80*
BNC Terminator 50 OHM	*$2.20*
BNC Connector Crimp on RG58	*$1.80*
BNC Connector Mold	*$2.00*
Gender Change DB25 F/F, M/M	*$4.00*
Gender Change Cent .36 F/F, M/M	*$7.00*
Gender Change DB25 to Cent .36	*$5.00*
Gender Change DB9 to DB25	*$4.00*
Gender Change DB9 to Din6	*$5.00*
RG58 A/U Coax Cable 1000	*$125.00*
RJ45 8 Twist Pair Cable 1000'	*$110.00*
RJ45 8 Twist Pair Cable 10'	*$3.50*
RJ45 8 Twist Pair Cable 25'	*$4.50*
RJ45 8 Twist Pair Cable 50'	*$9.50*

- *Microdyde/Novell*

NE-2000 Plus 16bit	*$115*
NE-2000T Plus	*$115*
NE-3200 EISA 32bit Coax/TP	*$539*
NE-2000 Plus 3	*$129*

Ethernet Adapters

- *Compatible*

NE-1000 8bit Coax	*$59*
NE-2000 16bit Coax/TP	*$60*
NE-2000 16bit Combo	*$75*
NE-2000 16bit 5 pack	*$235*
EP-888A Pocket Ethernet BNC + 10BT	*$145*
EP-808A 8Port Ethernet HUB	*$199*
EC-812 12Port Ethernet HUB	*$449*
EE-840 32Bit EISA Ethernet	*$289*

- *Intel*

Etherexpress 16 16bit 5pack/20pack	*$575/1995*
Intel 16bit Ethernet Combo PCLA 8100	*$129*
Intel 16bit Ethernet BNC PCLA 8110	*$115*
Intel 16bit Ethernet 10BT PCLA 8120	*$115*
Intel 16bit Ethernet Combo PCLA 8105/Flash	*$159*

- *3COM*

3C503 Etherlink II 16 Coax/TP	*$175*
3C503 Etherlink II 16 5pack	*$785*
3C507 Etherlink II 16 Coax/TP	*$295*
3C509 Etherlink III Coax/TP	*$145*
3C509 Etherlink III 5pack	*$645*

- *SMC*

Ether card plus elite 16 Coax/TP	*$119*
Elite ultra 16bit Coax/TP	*$115*
Elite ultra 16bit 6pack/24pack	*$675/2375*
SMC Ultra 16 Bit Ethernet Combo	*$135*

- *DLINK*

DE-600 TP Pocket Ethernet 10BT	*$199*
DE-205 TP 16Bit Ethernet 4 Port 10BT	*$290*

• *4 Port 10 Base-T Hub Card*	*$150*
• *8 Port 10 Base-T Hub*	*$215*
• *12 Port 10 Base-T Hub*	*$485*

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NOTEBOOK

Twinhead Powerful Slimnote

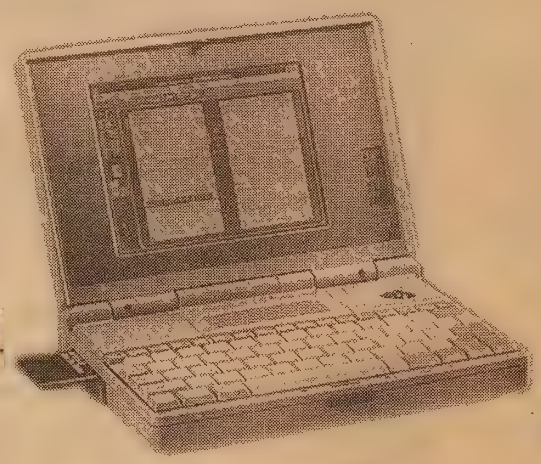
- Intel SL Enhanced Processor
- 4MB RAM Expandable to 20MB
- 1.44MB Built-in Floppy Disk Drive
- 84 Keys Keyboard
- PCMCIA Type II Slot
- Built-in Trackball
- 10" VGA/Mono Display
- MS DOS 6.2, MS Windows 3.1
- Physical Dimensions 8.5" x 11" x 1.6"
- Weight with Battery 5.8 lbs

486DX-33 w/130MB HD	**$1945**
486DX-33 w/200MB HD	**$2130**
486DX2-66 w/200MB HD	**$2590**

MTC-4020 Color Notebook

- Intel 486SX-33 CPU
- 4MB RAM Expandable to 20MB
- 130MB IDE Hard Disk
- One Serial Port, One Keyboard/Mouse Port
- One External VGA Connector
- One PS II Keyboard/Mouse Connector
- 85 Keys Keyboard with Inverted " T" cursor Keys
- Build-in 1.44 MB Floppy Disk Drive
- Built-in 16mm Trackball
- Preloaded with Microsoft DOS and Windows
- 11" (W) x 8.5" (D) x 1.9" (H)/5.5lbs

$1815



PCMCIA

XIRCOM. Creditcard Ethernet Adapter
- Convenient Network Connection VIA the PCMCIA Slot

$289

ADAPTEC SLIM SCSI
- 16 Bit PCMCIA-To- SCSI Host Adapter

$289

• **Pocket Lan Coax (for notebook)**	**$137**
• **Pocket Lan 10 Base-T (for notebook)**	**$140**
• **14400 Fax/Moden Mini-Pocket (for notebook)**	**$229**

- Intel SL Enhanced Processor
- 4MB RAM Expandable to 20MB
- 1.44MB Built-in Floppy Disk Drive
- 84 Keys Keyboard
- 256 Color Display/512K RAM
- PCMCIA Type II Slot
- Built-in Trackball
- MS DOS 6.2, MS Windows 3.1
- Physical Dimensions 8.5" x 11" x 1.8"
- Weight with Battery 6.3 lbs

486DX-33 w/130MB HD Dual Scan Color	**$2695**
486DX2-66 w/200MB HD Dual Scan Color	**$2845**

Twinhead Brilliant Color Notebook

486DX-33 w/130MB HD Active Color	**$3555**
486DX-33 w/200MB HD Active Color	**$3695**
486DX2-66 w/200MB HD Active Color	**$4155**

Twinhead 4 Pounds Powerful Subnote

- 4MB RAM Expandable to 8MB
- 1.44MB External Floppy Disk Drive
- 8" Side lit VGA display, 64 shades
- 85MB IDE Hard Disk
- 79 Keys Keyboard
- 64 Gray Shades VGA Display
- PCMCIA Type II Slot
- Built-in Trackball
- MS DOS 6.2, MS Windows 3.1
- Physical Dimensions 7.1" x 10" x 1.6"
- Weight with Battery 4 lbs

486SLC-33 Only **$1495**

Accesories

• Mini-Pocket 14.4 Fax Modem	**$229**
• Dlink DE-600TP Pocket Ethernet	**$199**
• Dlink EN-6000B Pocket Lan BNC	**$137**
• Danpex EN-6000T Pocket Lan 10BT	**$140**
• EP 888A Pocket Lan BNC + 10BT	**$145**

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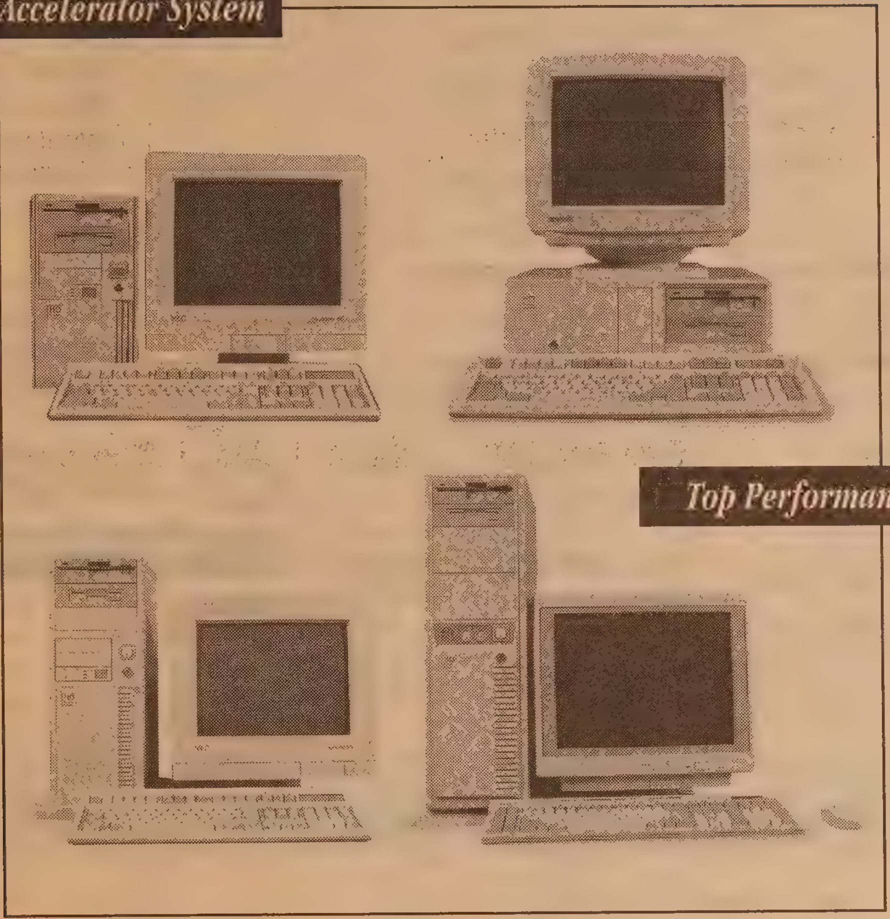
GENERAL/BEST BUY SYSTEM

ISA DX-50 Windows Accelerator System

- *Intel 486 Processor*
- *128KB Cache (Max. 256KB)*
- *4MB RAM (Max. 32MB)*
- *1.2MB FDD*
- *1.44MB FDD*
- ***424MB IDE HDD***
- *2H/2F IDE Disk Controller*
- *2S, 1P, 1G Ports*
- *16-bit Windows Accelerator Card/1MB*
- *Mini-Tower Case w/ 200W Power Supply*
- *14" Non-interlaced Monitor, .28 dpi*
- *101-key Enhanced Keyboard*
- *3 Button Serial Mouse*
- *Free Mouse Pad*
- *Free Software Option*

DX-50 $1425



Top Performance EISA/VESA System

- *Intel DX-486 Processor*
- *ZIF Socket OverDrive Ready*
- *8KB Internal Cache*
- *256KB External Cache*
- *4MB RAM (Max. 128MB)*
- *1.2MB FDD*
- *1.44MB FDD*
- *32-bit EISA SCSI II Controller*
- *2 16550 UART High Speed Serial Port*
- *1 Parallel Port*
- *345MB SCSI HDD*
- *Tseng Lab ET-4000 W32 VL-B Graphic Accelerator Card/1MB*
- *Mid Tower Case w/ 230W Power Supply*
- *14" ViewSonic 6E Non-interlaced Monitor*
- *101-key Keytronic Keyboard*
- *3 Button Serial Mouse*
- *Free Mouse Pad*
- *Free Software Option*

DX-33	**$2095**
DX-50	**$2185**
DX2-66	**$2195**

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486 System 386 Price

HD 486 System Below $1000

- *Intel SX 486 Processor*
- *128K Cache*
- *4MB RAM (Max. 32MB)*
- *1.44MB FDD*
- *270MB IDE HDD*
- *2H/2F IDE Disk Controller*
- *2S, 1P, 1G Ports*
- *16-bit SVGA Card/1MB*
- *Mini Tower Case w/ 200W Power Supply*
- *14" SVGA Monitor, .39 dpi*
- *101-key Enhanced Keyboard*
- *3 Button Serial Mouse*
- *Free Mouse Pad*

486SX-25	**$975**
486SX-33	**$999**

With Purchase of New System only

M.S. DOS 6.2	**$45**
M.S. Windows 3.11	**$48**
M.S. Windows for Workgroups ADD on 3.11	**$58**

Free Software Option:

- *PFS: Windows Works*
- *PFS: Publisher*
- *PFS: Prospect*
- *PFS: First Choice*
- *CD Title: Toolworks Encyclopedia*

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Hard Drives

CONNER

IDE Hard Disk

340MB, IDE, 13ms	$258
420MB, IDE, 12ms	$309
540MB, IDE, 12ms	$449

SCSI Hard Disk

Capacity	M/N	Cache	Speed	Size	Internal	External
340MB					$319	$429
540MB	CP30540	256K	12ms	3.5x1	$494	$614
1.0GB	CPF1060S	256K	10ms	3.5x1	$949	$1059

WESTERN DIGITAL

250MB, IDE, 13ms, 2 Yr. Warranty	$235
340MB, IDE, 12ms, 3 Yr. Warranty	$269
420MB, IDE, 13ms, 3 Yr. Warranty	$319
540MB, IDE, 12ms, 3 Yr. Warranty	$429

Maxtor®

IDE

131MB, IDE, 14ms, 1 Yr. Warranty	$179
245MB, IDE, 15ms, 1 Yr. Warranty	$239
345MB, IDE, 14ms, 2 Yr. Warranty	$269
540MB, IDE, 8.5ms, 256K Cache, 2 Yr. Warranty	$397

SCSI

290MB, SCSI, 14ms, 2 Yr. Warranty	$299
345MB, SCSI, 14ms, 2 Yr. Warranty	$337
540MB, SCSI, 8.5ms, 256K Cache, 2 Yr. Warranty	$569
1.2GB, SCSI, 8.5ms, 256K Cache, 2 Yr. Warranty	$1195

Quantum

540 MB IDE 128K Cache, 3.5X1"	$434
270 MB IDE 128K Cache, 3.5X1"	$235
1.2GB SCSI 512K Cache, 10ms	$939

IDE

Capacity	M/N	Cache	Speed	Size	Price
170MB	ELS170A	32K	17ms	3.5x1	$179
270MB	LPS270A	128K	Fast	3.5x1	$235
540MB	LPS540AT	128K	Fast	3.5x1	$434

SCSI

Capacity	M/N	Cache	Speed	Size	Internal	External
170MB	ELS170S	32K	17ms	3.5x1	$199	$325
270MB	LPS270S	128K	12ms	3.5x1	$299	$375
540MB	LPS540S	512K	10ms	3.5x1	$498	$609
1.0GB	PD1080S	512K	10ms	3.5	$769	$879
1.2GB	PD1225S	512K	10ms	3.5	$939	$1049
1.8GB	PD1800S	512K	10ms	3.5	$1099	$1219

Seagate

263MB, IDE, ST3290A — $218

Capacity	M/N	Cache	Speed	Sixe	Int.	Ext.
341MB	ST3390N	256K	12ms	3.5x1	$399	$529
456MB	ST3550N	256K	12ms	3.5x1	$529	$639
525MB	ST3600N	256K	10.5ms	3.5x1	$679	$799
1.05GB	ST11200N	256K	10.5ms	3.5	$799	$919
1.0GB	ST31200N	256K	9ms	3.5x1	$779	$889
1.4GB	ST41651N	256K	15ms	FH	$1099	$1299
1.9GB	ST42100N	256K	13ms	FH	$1489	$1689
2.1GB	ST42400N	256K	11ms	FH	$1699	$1899
2.1GB	ST12400N	256K	9ms	3.5	$1499	$1629
2.9GB	ST43400N	512K	10ms	FH	$2199	$2399
2.9GB	ST43401N	512K	Fast Wide SCSI II	5.25	$2499	$2699

FUJITSU

• 128MB Removable Optical Diskette • Rewritable • 3.5" Diskette Size of Floppy • Unlimited Storage • Ideal for Data Mobility • Fast Access time and Data Transfer. • ISO Standard • 128MB Rewritable Optical SCSI Drive

***Internal Drive* — $789**

- Bare Optical Drive
- 2511A
- Low Profile, Only 1"
- Fast 30ms Seek Time
- 256K Cache
- 3600RPM

***External Drive* — $899**

- External Optical Drive
- 2511A
- Includes 1 cartridge
- Formatting Software for MAC (Free upon request)

SCSI

Capacity	M/N	Cache	Speed	Size	Internal	External
1.0GB	M2694ESA	256K	10ms	3.5	$823	$949
2.0GB	M2654SA	256K	12ms	FH	$1395	$1599

IDE

Capacity	M/N	Cache	Speed	Size	Price
520MB	M2624T	64K	12ms	3.5	$449

MICROPOLIS

MC2210S
1.0GB Fast SCSI-II 3.5" 10ms Seek Time 5400 RPM **$825**

IDE

Capacity	Model	RPM	Speed	Size	Internal
1.0GB	MC2210A	5400	10ms	3.5	$825
1.75GB	MC2217A	5400	10ms	3.5	$1199

SCSI

Capacity	Model	RPM	Speed	Size	Internal	External
1.0GB	MC2210	5400	10ms	3.5	$825	$935
1.0GB	MC2210AV	Audio/Visual			$999	$1109
1.4GB	MC1908	5400	11ms	FH	$1249	$1449
1.75GB	MC2217	5400	10ms	3.5	$1199	$1309
1.75GB	MC2217AV	Audio/Visual			$1299	$1409
1.8GB	MC1548	3600	14ms	FH	$1499	$1699
2.0GB	MC1926	5400	11ms	FH	$1599	$1799
3.0GB	MC1936	5400	11ms	FH	$2299	$2499

SyQuest Removable Cartridge Drives

Cartridge for 88MB/105MB — $95/59

88MB	Internal	$279	88MB	External	$469
105MB	Internal, IDE	$239	105MB	Internal, SCSI	$279
105MB	External, SSI	$429			

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3.5" DS/HD Disk 25 pack $9.99

Motherboards

MODEL	TYPE	DESCRIPTION	PRICE W/O CPU
P5-MPS	Pentium PCI	3 PCI, 4 ISA Slots, Flash EPROM BIOS, 256K Cache up to 512K, 0MB RAM up to 192MB	$429
S1441	Pentium Local Bus	3 VESA, 8 ISA Slots, 256K Cache up to 512K, 0MB RAM up to 128MB, 3 Bus Master	$449
486SP3	486PCI Local Bus	3 PCI, 4 ISA Slots, ZIF Socket, 256K Cache up to 512K, 0MB RAM up to 128MB, Built-in PCI SCSI Controller, Built-in IDE Disk Controller, Built-in 2 Serial, 1 Parallel Ports	$319
486SVI	EISA/VESA	8 EISA, 2 VESA Slots, Zif Socket, AMI BIOS, 256K Cache up to 1MB, 0MB up to 256MB	$295
S1437	EISA/VESA	7 EISA, 1 VESA Slots, SIS Chipset, AWARD BIOS, 256K Cache, 0MB up to 128MB	$285
VL-SV2	VESA Local Bus	7 ISA, 2 VESA Slots, SIS Chipset, ZIF Socket, 128K Cache up to 256K, 0MB RAM up to 32MB	$145
CLT486VLS2	VESA Local Bus	Made in USA, 8 ISA, 2 VESA Slots, Contaq-A Chipset, ZIF Socket, 128K Cache up to 256K, 0MB RAM up to 128MB	$125

New! Made in USA

100MHz Pentium PCI MB/256K
- Power Saving
- Flash Eprom BIOS
- Run NT, Novell, Unix

$655

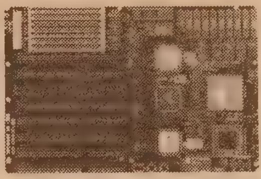
Micronics

VESA Local Bus/256K/DX-33 CPU	$649
VESA Local Bus/256K/DX2-66 CPU	$759
JX30 VESA Local Bus/256K/DX2-66 CPU	$864
EISA VLB/256K/DX-33 CPU	$845
EISA VLB/256K/DX2-66 CPU	$955
PCI/256K/33/66	$685/795

AMI Motherboard

Enterprise III EISA/VESA /256K/486DX-33 CPU	$865
Enterprise III EISA/VESA/256K/486DX2-66 CPU	$975
Enterprise IV EISA/VESA /256K/486DX-33 CPU	$745
Enterprise IV EISA/VESA/256K/486DX2-66 CPU	$855
Super Voyager VL-B/256K/486DX-33 CPU	$595
Super Voyager VL-B/256K/486DX2-66 CPU	$705
Pentium VLB MB 512K/60Mhz CPU	$1665
Pentium EISA PCI 256K/60MHz CPU	$1745
Pentium ISA PCI 256K/60MHZ CPU	$1715

GREEN 486
VESA Local Bus
Motherboard
3.3V/5V
25MHz-
100MHz DX4



SIS Chipset, 256K Cache
use 72-pin SIMM, Max. 64MB $195

Modems

Zoltrix 2400 Modem	$40
Zoltrix 9600/2400 Fax Modem	$59
Zoltrix 14400 Fax Modem	$99
US Robotics 14400 (Int)	$139
US Robotics (Ext)	$163
DSI 14.4K Internal Fax Modem	$129
DSM 1914XE Turbo External 19.6 Modem, 14.4K S/R Fax	$249
DSM 1414XB Internal w/ UART 16550 14.4K Modem, 14.4 S/R Fax	$139
DSM 1414XA External, Rockwell Technologies 14.4K Modem, 14.4 S/R Fax	$169
DSM 1414XP Mini-Pocket, 14.4K Modem, 14.4 S/R Fax	$229
DSM 2442XE External w/ Data-Tack Switch 2400 Modem, 9600 S/R Fax	$99
Hayes-Opt 144-F External Fax Modem	$385
Hayes-Opt 1441-F Internal Fax Modem	$369
Hayes-A144E-F Accura External Fax Modem	$239
Hayes-A144I-F Internal Fax Modem	$219
Intel 14.4K External Fax Modem	$166
Intel 14.4K Internal Fax Modem	$146
Mitac 14.4K External Fax Modem	$149
Mitac 14.4K Internal Fax Modem	$129
Supra FaxModem, 14.4 Internal/External	$125/$145
Smartone 14400 Fax Modem Internal	$125
NUVO 9600 SendFax Modem 4800 Receive Fax 2400 Modem	$49
NUVO 14400 Fax Modem Internal	$119
Tyin 2000 Fax Modem Audio Card	$209

Tape Back-Up

VIPER (SCSI)

2150S, 250MB VIPER, 6MB/Min		
	Internal	$329
	External	$449
2525S, 525MB VIPER, 6MB/Min		
	Internal	$559
	External	$579

ARCHIVE (SCSI)

(For IBM Compatibles, SUN, MAC & NeXT) Anaconda, 36MB, Min, SCSI-2, 1/4"" Tape Unit

1.3GB 2750	Internal	$799
	External	$899
2.0GB 2800	Internal	$999
	External	$1099

SUMMIT

With Central Point Backup Software, Runs off Floppy Port

120MB	Internal SE-120	$129
250MB	Internal SE-250	$159

COLORADO MEMORY SYSTEMS

Uses 2120 Tapes, Runs off Floppy Port

120MB	Internal DJ10 Jumbo 120	$99
250MB	Internal DJ20 Jumbo 250	$159

TRAKKER

Parallel Printer Port External Tape Backup Systems, Runs off Parallel Printer Port

120MB	External Trakker 120	$283
250MB	External Trakker 250	$323

WANGDAT (SCSI)

SCSI 4mm DAT

2.0GB (3100DAT)	Internal	$999
	External	$1099
4-8GB (3200DAT)	Internal	$1099
	External	$1199

MICROSOLUTIONS

Parallel Port	250MB External Tape Back-up	$359
Double Speed Parallel Port	External CD-ROM Backpack	$395

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Video Cards

ATi TECHNOLOGIES INC

Graphic Ultra+Windows Accelerator	
Graphic Ultra Pro	
Accelerated 1024x768 at 256 Colors - up to 74Hz. Non-interlaced.	
1MB VRAM	$275
2MB VRAM	$349
with ATi Bus Mouse	add $25
Graphics UltraPro 2MB EISA	$349
Graphics Ultra Pro VLB Mach 32	
1MB VRAM	$295
2MB VRAM	$349
MACH32 - 16.7 Million Colors	
1MB DRAM	$295
2MB DRAM	$349
with ATi Bus Mouse	add $25
MACH32 PCI 2MB	$445

DIAMOND Computer Systems, Inc.

Diamond	
Stealth Pro 1MB/2MB ISA	$245/338
Stealth Pro 1MB/2MB VLB	$255/335
SpeedStar Pro VESA or ISA	$119
Stealth 24 VESA or ISA 1280x1024	$155
Viper VLB 2MB VRAM Accelerator	$365
Viper PCI 2MB VRAM Accelerator	$428
Diamond Stealth 32 PCI 1MB/2MB	$199/245

ORCHID

ORCHID	
Celsius VLB 1MB VRAM/2MB	$199/261
Fahrenheit 1280 Plus 1MB	$149
Fahrenheit 1280 Plus VLB 1M/2M	$149/199
Fahrenheit VA or VA/VLB 1M/2M	$169/199
Kelvin 64 VLB/PCI	$209

SPiDER. Graphics, Inc.

Spider 32VLB	
VESA Local Bus, 1280x1024 in 256 colors, 1024x768 @ 72Hz	
1MB DRAM	$95
2MB DRAM	$135
Spider 32VLB Plus	
VESA Local Bus, 1280x1024 in 256 colors, 1024x768 @ 72 Hz, 30% Faster Than VLB	
1MB DRAM	$115
2MB DRAM	$159
Black Widow	
VLB, IIT AGX-015, XGA Graphics Engine, VRAM 32-bit OS/2 2.1 Drive Support, up to 100Hz Refresh Rate	
1MB DRAM	$149
2MB DRAM	$209
Spider 64 VLB/PCI 2MB	**$309**

CARDEXPERT

ET-4000	1MB ISA	$85
ET-4000W32 VL-B	1MB	$125
ET-4000W32i VL-B	2MB	$185
ET-4000 W32P PCI	1MB/2MB	$195/$225
ET-4000	1MB ISA True Color	$95
Cirrus Logic 5420	1MB ISA	$59
Cirrus Logic 5426 VLB	1MB	$95
Cirrus Logic 5428 VLB	1MB	$99
UMC VLB VGA	1MB Built-in IDE/2S1P1G	$115
WD Chipset ISA	1MB	$95

AMI

Fast View VLB	2MB RAM, Windows Accelerator Card	$359

matrox VIDEO PRODUCTS GROUP

MGA-ULT/2/A	2MB ISA/VLB	$499
MGA-IMP/3/A	3MB ISA	$739
MGA-IMP/3/V	3MB VLB	$739
MGA-PRO/4.5/V	4.5MB VLB	$1595
MGA-PRO/4.5Z/V	Z-Buffer VLB	$1895
MGA-PCI/2	2MB PCI	$459
MGA-PCI/2+	Upgradeable to 4MB	$539

#9

9GXI L-25F	3MB ISA	$1259
9GXE L-10	1MB ISA	$249
9GXE L-10	1MB VLB	$249
9GXE L-11	2MB ISA	$345
9GXE L-11	2MB VLB	$345
9GXE L-12	3MB ISA	$425
9GXE L-12	3MB VLB	$425
9GXE L-14	4MB ISA	$595
9GXE L-16		$895

Hercules

HG720	Graphite VL Pro 2MB	$409
HG310	Graphite Pro 1MB ISA	$279
HG610	Graphite Pro 1MB VLB	$289

DYNAMITE

D301 PRO	1MB ISA	$189
D302 PRO	2MB ISA	$259
D601 PRO	1MB VLB	$189
D602	2MB VLB	$259

SVGA Video Cards		
SVGA 256K Video Card		$29
SVGA 1024x768	1 MB	$59
SVGA VESA Local Bus		$79

3.5" DS/HD Disk 25 pack $9.99

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Controllers

adaptec

SCSI Controllers

1522	16-bit 7HD/2FD Kit	$145
1542C	Bus Master Complete Kit	$239
1542C+	Bus Master Kit with Corel SCSI	$312
2742	EISA Kit 14HDS	$395
2842	VESA Kit Fast SCSI II	$299
1510ACDK	For CD ROM	$95

AMI

SCSI Controllers

FastDisk EISA Caching Controller up to 16MB	$389
FastDisk VLB VESA Local Bus Caching Controller	$393

DATA TECHNOLOGY CORPORATION

SCSI Host Adapter, Supports 7 SCSI Devices, up to 8 BG each, Floptical support thru the BIOS

DTC 3270VL VESA Local Bus		$125
DTC 2278	VLB IDE	$39
DTC 3280	ISA SCSI	$139
DTC 3290	EISA SCSI Cache	$499

TRANTOR®

ASPI Device Driver for: CD-ROMs, Photo CD, Tape Drives, Syquest, Opticals, Scanners, Hard Drives	$49
EPP Mini SCSI	$209

BUSLOGIC

SCSI Controllers

BT542	Busmaster SCSI-II Kit	$219
BT445S	VESA SCSI-II Kit	$274
BT545KT	Bus Master Fast SCSI	$208
BTB742KT	EISA SCSI-II Kit	$315
BTB747AK	EISA Fast SCSI Kit	$364
KT946C	PCI SCSI Kit	$295

PROMISE TECHNOLOGY, INC.

VLB Cache Controller

DC-200	ISA IDE Cache	$95
DC-200M	ISA IDE/512K	$124
DL-420	VLB IDE/512K	$108
DC-4030	4F/2H VLB Cache	$124

TECO

DC-600B	ISA/IDE Cache	$129
DC-620B	EISA/IDE Cache	$199
DC-680	VLB/IDE Cache	$149
DC-800B/1MB	ISA/Fast SCSI II Cache Mirroring Controller/1MB RAM Built-in	$299
DC-820	EISA/Fast SCSI II Cache Mirroring Controller	$79

ATEN

VESA IDE/IO 2S1P1G	$45
16-but Super IDE/IO 2-16550 2.88	$59
16-bit IDE/IO 2S1P1G	$25
2-16550 High Speed Serial Ports	$42

NCR PCI SCSI II HD Controller		$125
GSI-21-V	**Intelligent IDE**	$69
Co-Resident	**Intelligent IDE**	$49
Printer Card		$25
AT/IO Card	**2 Serial, 1 Parallel**	$19
DPT	**Fast EISA SCSI Cache Kit PM202 Built-in support for OS/2, Netware, UNIX, Windows NT, Banyan, Banyan Vines and NextStep OS**	$419
32-bit VLB IDE	**Controller w/2-16550 Serial Port, 1 parallel, 1 game**	$69

HD

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Monitors

SONY

CPD 1730	17" SVGA	.25 dpi	$995
GDM 17SE1	1600 X 1280	.25 dpi	$1172
GDM2038	20" State of the Art		$2185

Call HD for the best prices in the Bay Area!

MITSUBISHI (IBM and Mac)

15"	Diamond Scan 15FS .28dpi Anti-static/Anti-Glare Flat Screen	$495
17"	Diamond Scan 17FS .28dpi Flat Screen with Invar Shadow Mask	$1045

NANAO

F550i	17"	Non-interlaced	1280x1024	.28 dpi	$939
F550iw	17"	Non-interlaced	1280x1024	.28dpi	$1039
F560iw	17"	AKA: the Green Monitor			$1323
T560i	17"	Non-interlaced	1280x1024	.25 dpi	$1623
T660i	20"	Trinitron Tube	1280x1024	.28 dpi	$2373
T750i	21"	Non-interlaced	1280x1024	.32 dpi	$1989
F760i	21"	1280x1024 @ 74Hz		.31 dpi	$2095

MAG

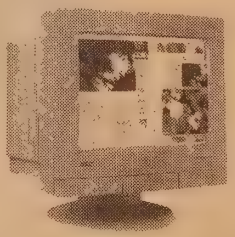
MX15F	15" Non-interlaced, 1280 X 1024, Flat Screen .28	$495
MX17GE	17" 1280 X 1024 Flat Screen .26	$915

14" Mono Monitor			$95
14" VGA Mono Monitor			$119
14" SVGA	.39 dpi	1024 X 768	$219
14" SVGA	.28 dpi	1024 X 768	$245
14" Non-Interlaced SVGA	.28 dpi	1024x768	$259
14" Standard	.28 dpi	1280x1024 NI	$285
15" Non-Interlaced SVGA	.28 dpi	1280x1024 NI Flat Screen	$385
Impression 17"	Non-Interlaced SVGA		$699
KFC 17"	W/ Digital, 2 years warranty		$745

NOKIA (IBM and Mac)

449E	15" Max-80Hz	.28dpi Digi Control	1024x768 Green Monitor	$515
447B	17" Max-110Hz	.26dpi Trinitron Digi Control	1280x1024	$965
445M	21" Max-120Hz	.26dpi Digi Control	1280x1024 Green Monitor	$2069
445X	21" Max-120Hz	.26dpi Digi Control	1600x1200 Green Monitor	$2698

NEC



JC1431	14"	1024x768	$319
3V	15"	1024x768	$473
3FGe	15"	1024x768 @ 60Hz	$565
4FGe	15"	1024x768 @ 76Hz	$629
5FGe	17"	1024x768 @ 76Hz	$999
5FGp	17"	1280x1024 (with Opticlear)	$1129
6FGp	21"	1280x1024 (with Opticlear)	$1999

ViewSonic *The New Generation*

ViewSonic 6E	14"	.28dpi Non-interlaced	$280
ViewSonic-15	15"	.28 dpi 1280x1024 Non-interlaced, 76Hz at 1024x768, Flat Screen	$445
ViewSonic-17	17"	.28 dpi 76Hz at 1280x1024, Non-interlaced, Flat Square Screen	$975
ViewSonic-20	20"	.28 dpi 1600x1280, Non-interlaced, Dual Page Display	$1575
ViewSonic-21	21"		$1825

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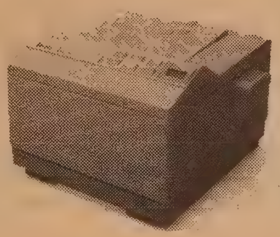
Printers

HEWLETT PACKARD

HP DeskJet 500C	$395
HP DeskJet 520	$295
HP DeskJet 550C	$499
HP DeskJet 560C	$569
HP LaserJet 4	$1398
HP LaserJet 4P	$969
HP LaserJet 4L	$639
HP LaserJet 4M	$1895



ALPS LSX 1000 Laser Printer $1190

Panasonic Office Automation OA

2123	24-pin	$239
2124	24-pin	$319
2624	24-pin Quiet	$399
2180	9-pin	$169
4430	Laser 1MB	$669
4450	Laser 10ppm	$1039
4455	Laser 2MB	$1439

Mouse, Joystick & Scanner

Microsoft Serial Mouse (OEM)	$34.00
Microsoft Bus Mouse (OEM)	$59.00
Logitech MouseMan (Serial)	$55.00
Logitech Bus Mouse	$65.00
Logitech Trackball	$74.00
Logitech ScanMan Easy Touch	$199.00
Logitech ScanMan 256 w/ Omni Page	$189.00
Logitech CyberMan 3D Mouse	$79.00
Z-Nix Cordless Mouse	$28.00
3-Button Serial Mouse	$9.90
Joystick	$14.00
Mouse Holder	$2.50
Mouse Pad	$2.50

Keyboards

101-Key Enhanced Keyboard	$29
Keytronic 101	$36
OMNI101 (Northgate)	$98
Focus 9000 129 Keys Programmable	$65
Focus 8000 111 Keys w/ Calculator	$55
Focus 7000 With Track Ball	$59
Focus 2001 Click 101	$42
ProXellent 121 Keys Programmable (White)	$79
ProXellent 121 Keys Programmable (Black)	$89
KB-5181 Mechanical Firm Click	$35
KB-5311 101 Keys Membrane	$25
KB-5591 Trackball Keyboard	$49
PN501 Plug N' Save	$59

Accessories

3.5" DS/DD Disk	25 pack	$8.99
3.5" DS/HD Disk	25 pack	$9.99
5.25" DS/DD Disk	25 pack	$6.50
5.25" DS/HD Disk	25 pack	$7.50
3.5" DS/DD	10 Pack 3M	$7.00
3.5" DS/HD	10 Pack 3M	$8.50
5.25" DS/HD	10 Pack 3M	$8.00
DC-2120	3M	$13.00
Power Center	UL	$18.00
Power Strip	Plastic, UL	$5.00
Disk Box	5.25 x 100	$6.00
Disk Box	3.5" x 80	$6.00
Data Switches	DB25AB	$8.00
Data Switches	DB25 ABCD	$16.00
Mouse Pad		$2.50
Monitor Filter	14" Glass	$10.50
Dust Cover	Keyboard	$3.00
Dust Cover	CPU and Monitor	$5.00
Disk Clean Kit	5.25" or 3.5"	$2.50
Printer Cable	6'/10'	$3.00/$6.00
Printer Cable	15'/25'	$7.00/$9.00
RS232	DB25 10'/25'	$6.00/$10.00
Keyboard Ext. Cable	6'	$3.00
Modem Cable		$4.00
SCSI I/SCSI II Cable		$11.00/$40.00
486 CPU Cooling Fan		$9.50
586 Pentium CPU Cooling Fan		$19.00
14" Color Monitor Filter		$8.00
14" Anti-Glare Filter		$29.00
Printer Stand		$9.00
Mouse Holder		$2.50

And More...

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BitFax Professional—The New Fax Standard

BY
ED KAHN

RESOURCES:

AcerNote 745C, $2,399
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San Jose, CA 95134
1-800-733-2237

BitFax Professional,$129
Bit Software, Inc.
47987 Fremont Blvd.
Fremont, CA 94538
(510)490-2928

Zoom/Voice FaxModem $229
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LAPTOPS

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I was slow to admit the advantages of a fax modem, but over the past year I've found that I do most of the faxing on my portable with fax software and a fax modem. When I create documents on the computer, it's simply easier to fax directly from the computer than print out the item and then fax it on a standalone machine. When I'm away from home, it's especially convenient.

Now that the price of fax modems has fallen dramatically and, at the same time, the quality of the software has improved, the scale is tipped even farther in the direction of buying the required hardware and software.

BITFAX: STATE OF THE ART

BitFax Professional goes way beyond the stripped-down fax software I have been enjoying. In fact, this new release from Bit Software incorporates a whole family of applications.

At the center of the package is superb fax software. In the old days, after I created a document with Windows-based software, I had to select the fax driver as my printer and then "print" to that driver. Now, if you are using Microsoft Word, AmiPro, or Excel, you can install an icon in the tool bar. Click the icon, and the document is automatically converted into a fax file ready for transmission. Type in the phone number, if it is not already in your fax phone directory, and your fax is on its way. Of course, you can still make a cover sheet, with or without a logo, and add a signature or other special designs you might want to insert into the basic document you are faxing. The complete file is stored in fax format in case you need to transmit it again.

This package will do everything you expected and then some. When you receive a fax, you can instruct the software to automatically print the fax. You can also direct it to convert the incoming fax into the format of your word processor so you can edit the text. I must warn you, however, that OCR (Optical Character Recognition) software still is not completely accurate; you'll certainly have to correct some characters after the conversion is done. In any case, this feature is convenient if you need to work with the received material, and it is usually a lot quicker than reentering the text through the keyboard.

This software will also now allow you to do simple editing right on the fax. You can circle items, draw on top of the fax with the mouse and add text in a variety of typefaces. While I seldom need this feature, it is certainly convenient, especially for filling out forms you receive and sending them back.

File management is improved with this new release. You can set up folders to hold faxes that should be grouped together. For instance, you might set up a folder for real estate related faxes, another for legal communications, and a third one for faxes from your branch office. It's easy to assign faxes that belong together to the same folder and to copy or move faxes between different folders.

The real strength of this new package, however, lies not only in its sophisticated fax capabilities, but also in the other things it can do. The most striking addition is a complete telephone answering system, which requires a fax modem with voice capability. Currently there are only a few on the market, but I suspect that there will be a wider choice in the months to come.

I tested the Zoom fax modem, which will transmit at up to 14,400bps. Unfortunately, this modem is not convenient to use with most newer portables as it is not miniaturized and also connects through a serial port. My serial port is generally taken up by a mouse. I assume there will be voice fax modems available on PCMCIA cards one of these days. In the meantime, this software and hardware is certainly a hint of things to come.

THE REAL STRENGTH OF THIS NEW PACKAGE, HOWEVER, LIES NOT ONLY IN ITS SOPHISTICATED FAX CAPABILITIES, BUT ALSO IN THE OTHER THINGS IT CAN DO. THE MOST STRIKING ADDITION IS A COMPLETE TELEPHONE ANSWERING SYSTEM.

The software allows you to set up separate mail boxes for each individual who receives calls or faxes. You can also instruct the software to dial your pager after you receive either a message or a fax. It is easy to retrieve both voice messages and faxes from remote locations.

Not long ago, telephone management through a computer required a board. Now, the whole operation is handled completely through software that will go on any computer running Windows. One problem with the voice manager is that it is virtually impossible to break in once the computer answers your phone. This will be corrected in the next release.

The final module of this amazing product is BitCom, a communications program that also runs under Windows. I welcomed this addition, as it makes sense to have a communications program as part of the fax

Continued on page 66

❖ 64-Bit Graphics ❖ True-Color ❖ 5-Year Warranty

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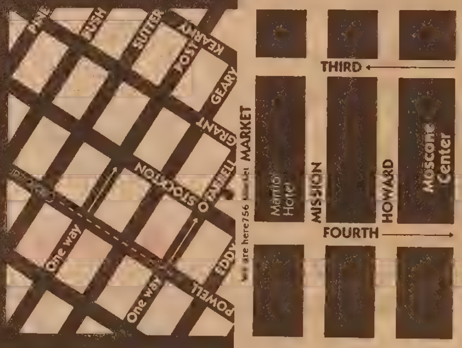

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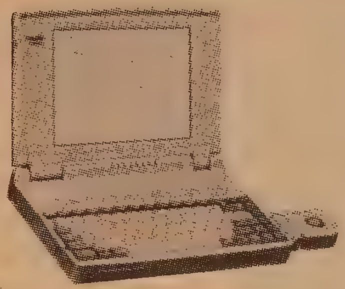

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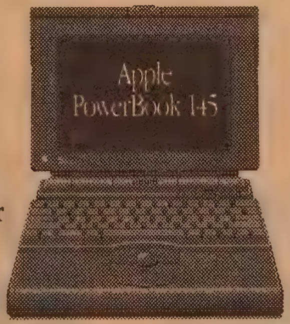

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package. The design of BitCom is excellent, with scripting so you can automatically log on to bulletin boards and services.

While I welcomed this module, I must confess that I've had a good deal of trouble with it. First, I haven't been able to get the scripts to log on to my favorite bulletin board. I hesitate to lay the blame squarely on the software, as it could be the modem or the system that I am using, but I suspect not.

I have also had a fair number of lockups with the communications module. I spent time with Bit Software's technical support. Although they told me I should not be having these problems, I still do. I'm still unable to report conclusively just what is causing these problems.

A final word of warning is that there is so much capability in this package that 4MB of memory isn't quite enough. I have been able to receive faxes without trouble, but if they are too long, the transmission stops, as a result of insufficient memory. If you're serious about receiving long faxes, make sure you have enough memory.

For $129, you sure get your money's worth. Even if you cannot take advantage of all the features this package offers, it is well worth it. But while I am excited about what this package can do, I eagerly await the next bug-free release.

◆

COMPUTER OF THE MONTH:

AcerNote 735C

In benchmark after benchmark, Acer computers consistently rank high on the list. Their new 735C notebook computer is a beautifully designed and constructed piece of equipment. It features an i486SX processor running at 33MHz, a large dual scan passive matrix display, and 4MB of memory, which you can upgrade to either 8 ($269 extra) or 12MB ($699 extra).

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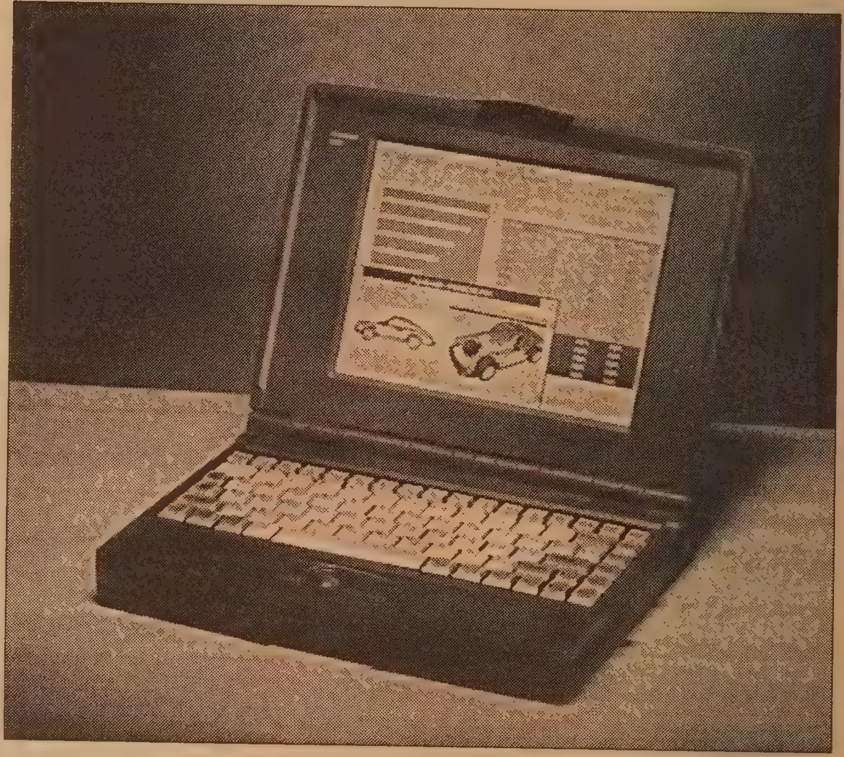
weighs 6.4lbs. The basic configuration includes a 210MB hard drive as well as a 1.4MB 3.5" floppy drive. A single serial port and parallel port are standard equipment.

The AcerNote 735C comes loaded and ready for business. Both DOS 6.2 and Windows 3.1 are installed. All of the software that comes with the machine is also included in compressed form so you can download the distribution software directly from the hard drive. Instruction manuals are, of course, shipped with the package. All you have to do to begin is pop the nickel metal hydride battery in place and turn the machine on.

It's advisable to begin with the AC adapter in place as this will ensure a fully charged battery and conserve power during the time you are exploring the machine. Additional NiMH batteries ($169) are available. Battery packs recharge in about two hours.



The keyboard is certainly adequate, but it is easy enough to use an external keyboard of your choice—simply plug any PS/2-compatible keyboard into the port on the side. For those on the go who prefer to travel with a numeric keypad ($69), it plugs into the same port. The installed keyboard has a good touch and feel as well as layout. The most interesting thing about its design is that it can be removed to gain access to the guts of the machine, where you can add extra memory or other upgrades.

This computer is designed for use with Windows, and a trackball is built into the unit just below the keyboard. More and more, I am coming to prefer a regular mouse connected through the serial port for serious work. The design of this machine makes it simple to switch between the trackball and a mouse. Simply plug in the mouse to the serial port and the trackball is automatically disconnected. There is no need to change anything in the config or autoexec files.

The AcerNote 735C comes loaded and ready for business.

The 9.5" color LCD provides a clear, crisp display, but you can easily add an external color monitor. The local bus video built into this system adds to the speed of the video display when working with CAD applications or other software that makes lots of demands on the video system. I'm discovering that for text-based applications, there is not that much performance advantage to local bus systems. Nevertheless, this is a significant advantage to this computer as it is optimized for any kind of work you may want to do.

The 735C comes with either one PCMCIA III or two PCMCIA II slots. The only difference between type II and III is the physical height of the device. So if you use a type III device, there is only room for one card, but if you use the thinner type II cards, you can add two different PCMCIA devices. Acer offers PCMCIA network cards ($349) as well as a fax modem card ($249).

The final feature of this machine is the technical support Acer offers. A twenty-four-hour replacement plan assures you of continued service even if you have a hardware problem. An international traveler's warranty gives you protection anywhere in the world, and a bulletin board and fax support are available twenty-four hours a day. This is a wonderful computer with more features than I have been able to mention. Rest assured that you will be pleased with the Acer 735C. ■

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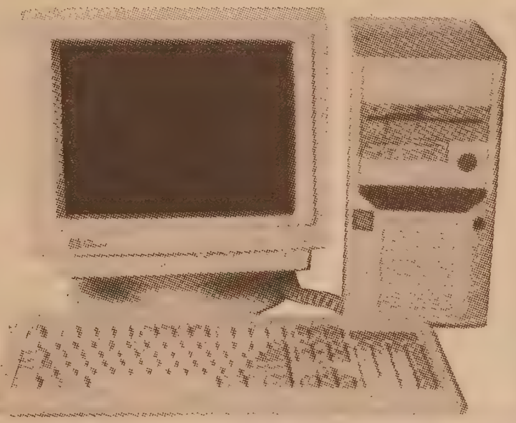

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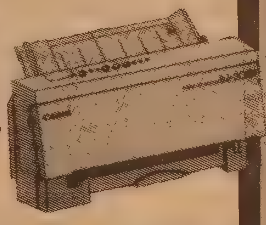

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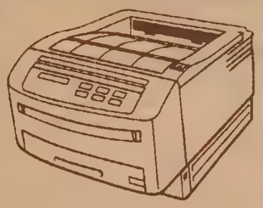

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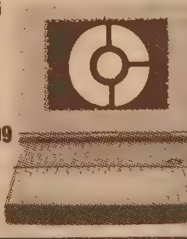

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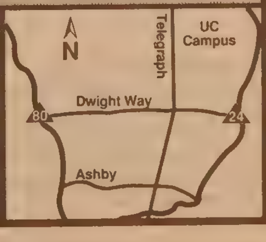

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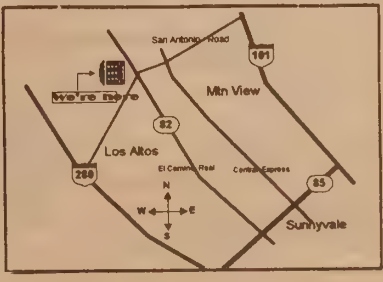

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What A Telecommuting World Will Look Like

A Look At The Social And Business Environment Needed To Support Telecommuting

BY ROBERT MOSKOWITZ

This month, I'm bringing you an exploration of how work, play, home, and business institutions can, might, perhaps even should change in order to facilitate and support the telecommuting style of work.

Here's a discussion, part of a larger work, jointly developed by myself and Franz Nahrada, research director, GIVE (Globally Integrated Village Environment) Project, Vienna, Austria, during his recent visit to this country.

THE TELECOMMUTER'S NEIGHBORHOOD

Today there is a great deal of concern about the technical infrastructure of the information age, but much less attention is paid to the physical infrastructure, like housing and space use. Nor is enough being said about the environmental concerns, in the sense of surrounding a telework center with an environment of necessary services. This is unfortunate, because a successful transformation from our present industrial-based society to a twenty-first century information-based society requires all three.

Could it be that some of the shortcomings of telecommuting—particularly the relative reluctance of many people and organizations to try it or support it—are related to feelings of discomfort prompted by the difficulties of trying to telecommute from places that were shaped for another work style? And vice versa: Isn't it possible that telecommuting, which is still high up on the wish-list of so many people, could receive a big boost if the right kind of workplaces were designed and made available for it?

A successful implementation of telecommuting requires the careful blending of three main elements: the business organization that makes use of it, the environment that supports it, and the person who does it.

In this article, we will focus on the second element: the social and business environment needed to support a society of telecommuters.

The way work and society are organized today, people who make the traditional commute from their home to their place of employment are feeling under much more pressure than ever before, and a growing proportion of public effort is being spent on reorganizing work patterns to make it possible for people to work in their own neighborhoods. But where are the facilities to support such a local telework culture?

> A **telecommuter** needs **more** than just a **quiet** cubicle, a **computer**, and a **fax**.

It seems that today's models for suburban development have a life of their own, replicating themselves, ad infinitum, without leaving room for any of the variations or subtle changes that would help to support and nurture a more telecommuting-oriented style of work.

Once we understand the differences between today's industrial patterns and what might work better for us tomorrow, perhaps we can create sufficient incentives to make planners and developers consider meeting some of these needs in place of what is too often the standard suburban dullness. We will also need incentives for lawmakers and public administrators to redefine space-use policies that presently strive to separate residential areas from traditional business zones.

In this game, no player makes a move unless the others move first. If the home owners are happy with the way things are, there is no reason for developers to build anything different or for city planners and administrators to change zoning laws. Obviously, homeowners today aren't happy with the need to commute so far to work, but at present there is no attractive alternative—and there won't be until and unless they begin to demand that one be provided.

Let us now begin to imagine a place suitable for telecommuters to live and work. What would be the qualities and characteristics of such a location? In all likelihood, it would be somewhat different from the neighborhoods we live in today.

Twenty years of telecommuting experience and countless studies have yielded a number of basic rules and guidelines for a telecommuting-friendly environment, such as:

TELECOMMUTING NEEDS A DEDICATED WORKPLACE

As the center of society, the home is perfectly fine. It may even function well as a telecommuting workplace—but only to the extent it allows you to concentrate on your work and maintain the necessary distance from kids, TVs, pets, and other disturbances.

For people who have a problem working at home, alternative solutions could be some form of neighborhood offices: places in the same locale as your home but more suitable for undisturbed work, and easily reached by foot or by bicycle. These workplaces might well be time-shared with others living in the same neighborhood.

Copyright © 1994 by Robert Moskowitz. All rights reserved. *Robert Moskowitz is a business consultant based in Woodland Hills, CA, who writes frequently on productivity, office automation, and technology. He is president of the American Telecommuting Association, a membership organization serving the needs of telecommuters and those who want to become telecommuters.*

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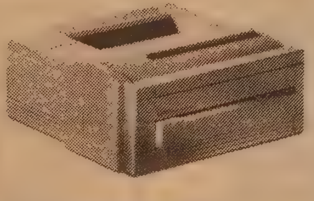

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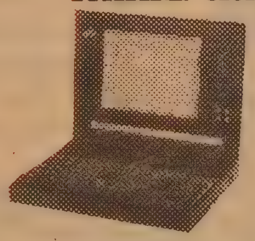

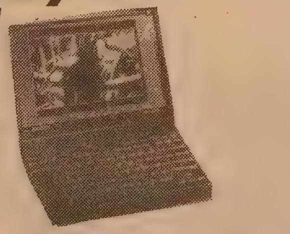

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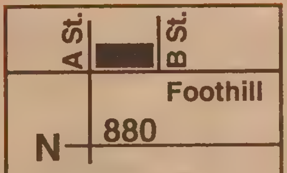

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A SATISFACTORY WORKPLACE NEEDS SUPPORTING SERVICES

A telecommuter needs more than just a quiet cubicle, a computer, and a fax. He or she needs printing and copying, a helping hand for mailing and urgent delivery, perhaps even some of the more professional and skilled functions of a secretary, or of a computer expert to help in various situations. Copy and support centers (like Kinko's and Alphagraphics) in modified form could move in and help meet this important need. Running such a neighborhood office in a residential area could provide a lucrative business opportunity.

Helping make a world where people can reduce traffic by staying close to home requires even more services, such as child care centers that allow parents to easily meet their kids during work-breaks.

A WORKPLACE NEEDS ENVIRONMENTAL VARIETY

A big advantage of working in the central business districts is that such locations allow you to make the best use of your time when you're not working. They are filled with a delightful array of delis and cafes that cater food fast, reliably, and in variety, not incidentally providing agreeable places for people to meet and chat. There are also copy stores, dry cleaners, movie-rental stores, massage parlors, health clubs, and all the other facilities and services that people are likely to need, want, and use during the business day.

Neighborhood telework offices should have comparable facilities and services: a neighborhood cafe nearby—or better yet, a mini-plaza or mall—where people can meet and chat, surrounded by a small selection of stores and facilities offering the same variety of services and products they would normally find downtown.

Retail outlets tied into electronic networking could make "teleshopping" and delivery of goods and services near neighborhood telework centers more fun than they are today. Effective use of "telematics" would allow for an array of services that have not been available so far to the neighborhood telecommuting workplaces. This would include, for example, telemedicine (where specialist doctors could examine a person and prescribe treatment from miles away) and virtual reality shopping centers (in which you could "browse" through a catalog electronically, getting help from trained staff and making purchases of merchandise that is not physically present).

While a normal K-Mart and shopping mall eats up dozens of acres of land, by comparison a "telematic" shopping center requires a very small footprint. A full-service one could comfortably fit into a residential area, and many residents might find jobs providing services there.

Although the sky is the limit, it would take only a small change in the ways we now provide for telecommuting, and the ways we now support telecommuters, to create a major difference in the degree of comfort available to these pioneers of twenty-first century work patterns. GIVE is organizing a conference and exhibition along these lines for Vienna, Austria, scheduled for February 1995, and is soliciting ideas and asking developers to show their models of what a city or village for the telecommuting age might look like. We are

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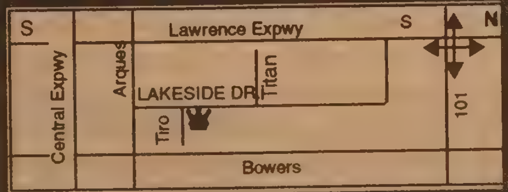

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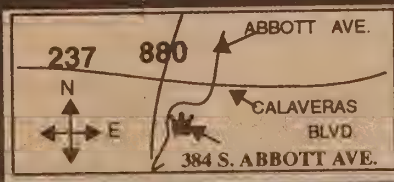

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eager to see developments of this kind take root and grow, and will keep you posted on any progress in these directions, as we learn of them.

TELEWORK CENTERS DEFINED

With so many people discussing the pros and cons of various designs for telecommuting and other uses of the "information superhighway," it's natural that definitions grow vague and the highly specific meanings of various terms get lost.

In an effort to bring some rigor to this otherwise amorphous discussion, Charles Grantham, of the Institute for the Study of Distributed Work, in Oakland, CA, is offering a structure and a method for describing more precisely the exact nature and characteristics of particular telecommuting work sites.

The idea is to employ two different scales on which to score a center: from 0–42 on a scale of communications bandwidth and connectivity, and from 0–36 on a scale of availability and quality of supportive services.

The result is to place every telework center into one of four possible quadrants. Let's take a look at each one:

> Helping make a **world** where people can **reduce traffic** by staying close to **home** requires even more services, such as **child care centers** that allow **parents** to easily **meet** their **kids** during work-breaks.

- Centers with low connectivity and low service are called Remote Work Sites. These can be anything from a table in your dining room to a simple cubicle in your local library or shared office suite. If all you need is a desk, paper, and pencil, a Remote Work Site is adequate to your telecommuting needs.
- Centers with low connectivity and high service are called Community Work Centers. These sites typically provide a wide range of supportive services, such as educational opportunities, child care for telecommuters, and access to government services. Telecommuting centers sited at community colleges (see Charles County Telework Centers, below) might be expected to fit this mold quite well.
- Centers with high connectivity and low service are called Communications Centers. This is a facility like a library, where people can find better access to information and communications capabilities than they are likely to have at home, or at any Remote Work Site. But also like a library, these sites are unlikely to offer a broad range of needed supportive services.
- Centers with high connectivity and high service are the ideal, of course. They present wonderful opportunities to accomplish productive work, whether it requires secretarial and other support services or access to vast quantities of information, or both! Today, the best example of this type of center might be the Executive Suite model, in which high-quality offices and support staff/services are available for rent as needed on a day-by-day, month-by-month, or annual basis. According to Grantham, this is the direction that holds the most promise for telework center development.

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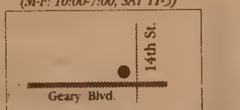

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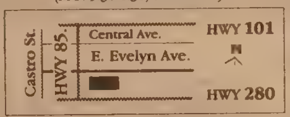

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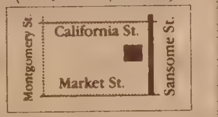

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visualizing the future of telecommuting, is that the forms of telecommuting services and centers now available generally focus too little emphasis on marketing. In the kind of market-driven economy in which we are presently operating, there is virtually no hope of sustaining large numbers of any form of telework center—particularly the expensive and service-intensive Executive Suite model (which Grantham calls "IntelliCenters")—unless the formula is found for attracting sufficient numbers of people to the center and making them willing to support it.

So far, most of the telework centers opened in this country (and around the world) have either been satellite centers totally supported by a single organization for its own benefit, or publicly funded and subsidized centers which have not been able to survive long once the funds run out. Neither of these models is likely to provide the kind of proliferation that is needed. Instead, we must wait for an approach to the business of telecommuting support that—like a McDonald's or a 7-11—provides the mix of products and services telecommuters want at a price they are willing to pay.

If anyone has any information about any such enterprises, I'd be happy to relay the information to others through this column. For more information on how to accurately classify telework centers and sites, contact Charles Grantham at the Institute for the Study of Distributed Work, (510)834-1485, fax: (510)834-1486.

CHARLES COUNTY TELEWORK CENTERS

One of the most exciting new telecommuting-support projects is taking place in Charles County, MD, where one of a series of networked pilot centers for federal teleworkers is just opening its doors. The center is located at Charles County Community College, in the southeastern part of the state, and is hoping to support about ninety people in forty-five telework workstations.

Unlike many other publicly funded projects, this one has a budget for marketing, and is apparently doing a good job of it. Before the year is out, project staff will complete and implement a marketing plan, study how the telework center can meet some of the needs of disabled workers, write a business plan to show how the concept can be extended to the private sector, and generally attempt to prove the Community Telework Center concept successful, from a business perspective. For more information, contact the president of the Charles County Community College, Dr. John Sine. ■

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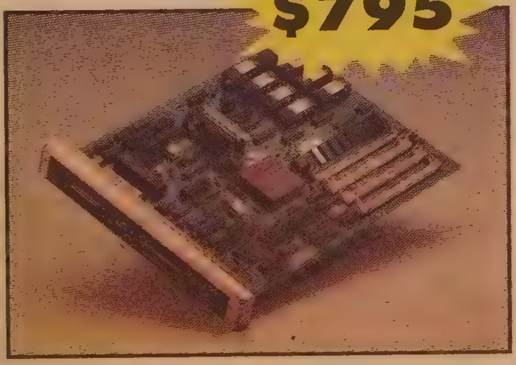

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SOS for Networks standalone version, $1495/yr
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Network Support Encyclopedia, $1395/yr
Novell, Inc.
1-800-NetWare

If you'd asked me two years ago if I thought a CD-ROM drive should be part of a LAN administrator's tool kit, I'd have said no. It has been a promising technology that just hadn't come of age yet, but a lot has changed in the last two years. CD-ROM technology, which has been around for years waiting for people to discover how easy it is to publish and distribute information on disk, has finally caught on.

Network support is one of those areas where CD-ROM technology can really help. Network technology changes too quickly to keep up, and there's so much information you need to have access to, so much you have to comb through to find the right answers, that putting it all into a searchable database on CD-ROM is an excellent solution for keeping ahead of the game. Novell had this figured out years ago, when it started publishing its Network Support Encyclopedia (NSE) on CD-ROM.

The NSE is a compilation of Novell's product manuals, specifications, tech notes, and software patches for NetWare and other Novell products. Novell used to distribute all this information on floppy, but this became an increasingly expensive way to publish, plus it had to be copied to a hard disk to be useful. With the per unit cost of a 600MB CD-ROM database dropping to less than the cost of a single 1.44MB floppy disk, it made sense to switch to CD-ROM. The cost of publishing individual CD-ROM disks is so low that Novell gives all NetWare 3.xx and 4.xx users a free copy of the NSE when they register their software.

CD-ROM technology, which has been around for years waiting for people to discover how easy it is to publish and distribute information on disk, has finally caught on.

Novell doesn't even bother shipping product manual books with its new NetWare 4.xx Network Operating System (NOS). Manuals, software, and software updates all come on CD-ROM. Ordering a paper copy of the documentation runs an extra $300. Other software companies have joined the CD-ROM revolution, and many software packages come, complete with documentation, on CD-ROM.

FINDING SOLUTIONS

Supporting a LAN is more than just supporting a network operating system. Network support people are usually the heart and sole of the computing support staff. They not only support the network, but also answer questions about how to use the installed hardware and software, and make buying decisions that run into the tens of thousands of dollars. Having quick and easy access to troubleshooting information and articles about the computing industry can make the difference between staying ahead of the game and spending most of your time hacking out imperfect solutions, listening to music on hold, and generally groping around in the dark for answers to time-sensitive questions. A CD-ROM drive with the right CD-ROM in it can make all the difference.

Computer Library sells several CD-ROMs that a LAN administrator could come to love, starting with its Support On Site (SOS) for Applications disk. The SOS for Applications is a collection of tech notes from various software vendors, combined with a keyword search engine that makes finding the answer to your latest headache a lot faster. Say, for example, that one of your users is having a problem with intermittent parity errors while running a DOS application under Windows on his Toshiba laptop, but your diagnostics program can't find anything wrong with the laptop. At this point, you have three choices: Call Microsoft technical support and sit on hold, call Toshiba technical support and sit on hold, or slip the Support On Site for Applications disk into your CD-ROM drive.

SOS for Applications has over 115,000 tech notes, including thirty-some articles about parity errors. The articles on parity

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errors range from broad descriptions of hardware-related memory problems to an article written by Microsoft titled "Using the Toshiba T5100 With Windows." With Support On Site, you can have your user on their way in fifteen minutes, or be listening to the Microsoft tech support disk jockey—it's your choice.

There are two databases in the Support On Site series. SOS for Applications focuses in on DOS and Windows applications, while Support on Site for Networks targets network hardware and software. SOS for Networks has a lot of good information, covering topics ranging from how to run Microsoft Windows under NetWare to Microsoft LAN Manager NDIS configurations for 3Com adapters, and it includes the software patches needed to implement any tech note solutions. About a quarter of the 50,000+ articles on SOS for Networks come directly from Novell's Network Encyclopedia or their technical manuals, but many of the problems a network administrator has to deal with have less to do with their Network Operating System (NOS), than with the supporting hardware or other support services. SOS for Networks comes with a much easier to use search engine, so even if the information you need is in Novell's NSE disk, it will be easier to find what you're looking for using SOS for Networks.

Still, there are big holes in the information available on the SOS for Networks disk. Tech support information for network backup software (a real headache area—you never seem to be able to get a hold of a support technician when you need one, and you only seem to need help in the middle of a crisis) is missing for Cheyenne, Colorado, Maynard/Conner, or Palindrome, all big players in the network backup business, and while Novell, Microsoft, and IBM NOS systems are well supported through SOS for Networks, there are only four hundred some entries from Baynan Systems, maker of Baynan Vines, and nothing at all from Artisoft, maker of Lantastic.

Computer Library has one more CD-ROM I think every network administrator can use. Computer Select is an archive of magazine articles and extracts from many of the leading computer magazines, with a full year's worth of information from over 150 different magazines, plus computer company profiles, computer product specifications, and two very useful dictionaries of computer terminology, Harry Newton's *Telecom Dictionary* (a favorite of mine) and Alan Freedman's *Computer Glossary*. Computer Select is the place to turn when you remember reading an article about something, but can't remember where, or when you need to become an instant expert on some computer-related topic. It is also an indispensable resource when it comes to making informed buying decisions.

Computer Select's CD-ROM databases are subscription deals, with updated disks coming out every month, so you're always current. You can also buy subscriptions to Novell's Network Support Encyclopedia, which is updated about once a month. A lot goes into these computer databases, and a subscription is not cheap, but if one of these CD-ROM databases helps you get the network back up in one hour instead of two, or helps you get just a handful of applications support problems solved in a few minutes instead of a few hours, or helps you avoid making a costly buying mistake, they pay for themselves. ■

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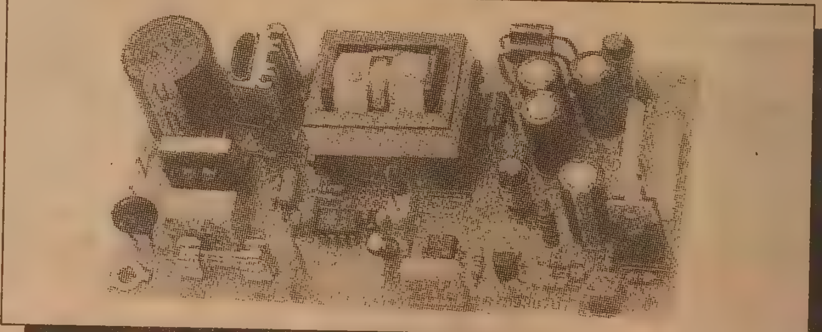

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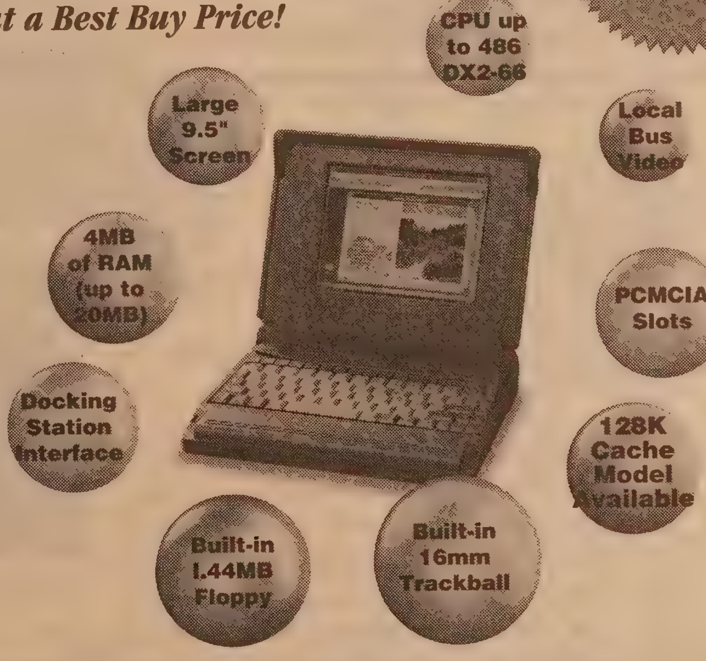
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OS/2:

PMJPEG

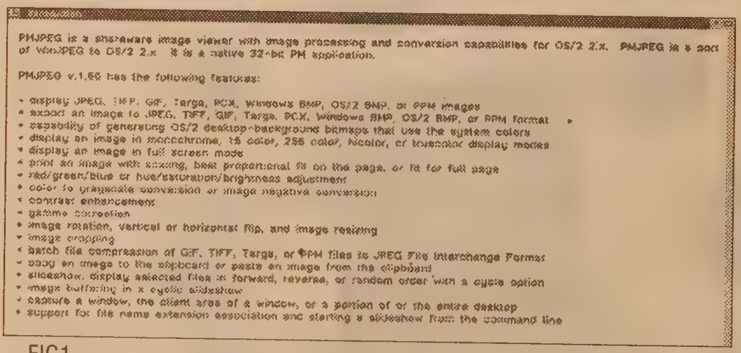
Image Handling At Shareware Prices

BY FABIAN PASCAL

RESOURCES:

PMJPEG v.1.63, by Norman and Ken Yee
Available on CompuServe

One would think OS/2 a natural for document and image processing applications. But, as noted in previous columns, while there are some high-end, sophisticated systems for corporate needs, there is practically nothing intended for the average user. There are, however, a few good utilities that provide basic functions, which could be good starting points for full-fledged image managers. One of those is PMJPEG.



PMJPEG is a shareware image viewer with image processing and conversion capabilities for OS/2 2.x. PMJPEG is a por of WinJPEG to OS/2 2.x. It is a native 32-bit PM application.

PMJPEG v.1.55 has the following features:

- display JPEG, TIFF, GIF, Targa, PCX, Windows BMP, OS/2 BMP, or PPM images
- export an image to JPEG, TIFF, GIF, Targa, PCX, Windows BMP, OS/2 BMP, or PPM format
- capability of generating OS/2 desktop-background bitmaps that use the system colors
- display an image in monochrome, 16 color, 256 color, hicolor, or truecolor display modes
- display an image in full screen mode
- print an image with scaling, best proportional fit on the page, or fit for full page
- red/green/blue or hue/saturation/brightness adjustment
- color to grayscale conversion or image negative conversion
- contrast enhancement
- gamma correction
- image rotation, vertical or horizontal flip, and image resizing
- image cropping
- batch file compression of GIF, TIFF, Targa, or PPM files to JPEG File Interchange Format
- copy an image to the clipboard or paste an image from the clipboard
- slideshow, display selected files in forward, reverse, or random order with a cycle option
- image buffering in a cyclic slideshow
- capture a window, the client area of a window, or a portion of or the entire desktop
- support for file name extension association and starting a slideshow from the command line

FIG1.

As described by its developer (Figure 1), PMJPEG is an "image viewer with image processing and conversion capabilities." You can view images on-screen, edit, and print them; you can also save them in, or convert them to, several supported graphic file formats. The images can be displayed individually, or in an automated sequence. You can process existing images, or create them yourself by capturing screen contents with PMJPEG.

PMJPEG is shareware and can be downloaded from the OS/2 forums on CompuServe. Registration gets you the latest version (as of this writing, 1.63) and a printed manual.

INSTALLATION

PMJPEG comes with a Rexx SETUP.CMD batch file. Typing "SETUP path" at the OS/2 prompt creates a \PMJPEG subdirectory in the specified path, decompresses the program files on the distribution disk, and copies them into the new directory. It also creates a folder on the desktop which contains PMJPEG and two text files: README.1ST and WHATS.NEW. Once read, these can be deleted (since my policy is to have only shadows of frequently used programs on the desktop, I moved the PMJPEG object to the OS/2 Apps folder, created a desktop shadow for it, and deleted the folder created by the installation).

CONFIGURATION

Clicking on its icon starts the program. Figure 2 shows the PMJPEG window with one of the sample image files that come with PMJPEG read in. The main menu has four intuitive options. Figure 3 shows the Options menu from which you can configure the operation of the program. Most options are rather obvious. As the submenu in Figure 3 shows, Maximum Color Depth is the number of colors—at given resolutions—displayed by PMJPEG. If an image has more colors than the option you select here, PMJPEG will reduce them accordingly for display. Therefore, for viewing purposes, this option should be set to the maximum supported by your OS/2 video driver (and adapter). For format conversion set it to 16.7 million colors, to avoid the display color reduction prior to saving.

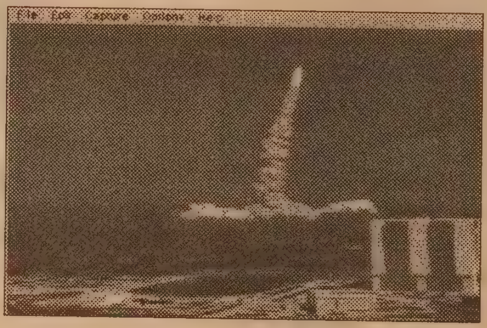

File Edit Capture Options Help

FIG 2.

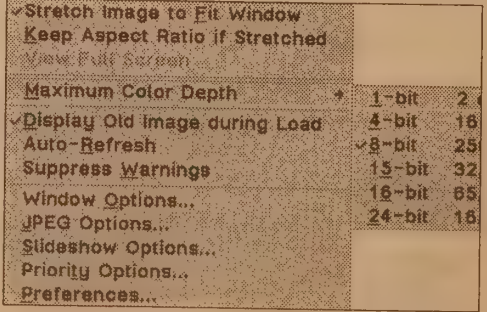

✓Stretch Image to Fit Window
Keep Aspect Ratio if Stretched
View Full Screen
Maximum Color Depth
✓Display Old Image during Load
Auto-Refresh
Suppress Warnings
Window Options...
JPEG Options...
Slideshow Options...
Priority Options...
Preferences...
1-bit 2
4-bit 16
✓8-bit 25
15-bit 32
16-bit 65
24-bit 16

FIG 3.

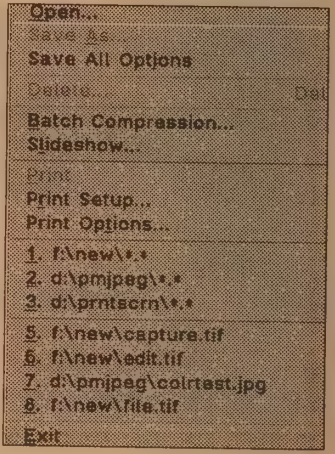
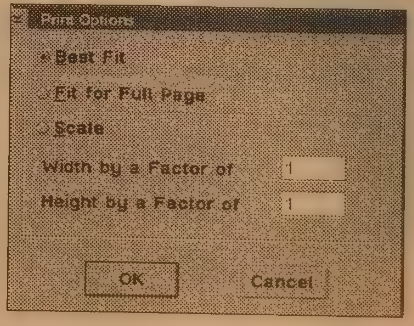

Open...
Save As...
Save All Options
Delete... Del
Batch Compression...
Slideshow...
Print
Print Setup...
Print Options...
1. f:\new\*.*
2. d:\pmjpeg\*.*
3. d:\prntscrn\*.*
5. f:\new\capture.tif
6. f:\new\edit.tif
7. d:\pmjpeg\colrtest.jpg
8. f:\new\file.tif
Exit

FIG 4.

The rest of the options are either self-explanatory or, if technical, reasonably explained in the manual. After you set preferences, you can save them permanently using the Save All Options in the File submenu (Figure 4), and they can be overriden temporarily and on the fly, if necessary.

RUNNING PMJPEG

To view an image in one of the supported formats, click on the Open option. It brings up the standard OS/2 file dialog window where you can select the specific path and name of the image file. You can set up a graphics format filter using the desired


Print Options
OK
Cancel

● Best Fit
○ Fit for Full Page
○ Scale
Width by a Factor of 1
Height by a Factor of 1

FIG 4a.

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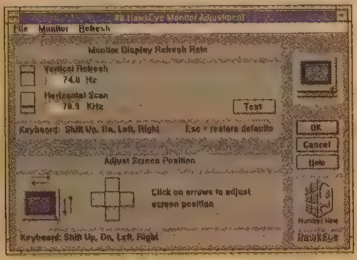

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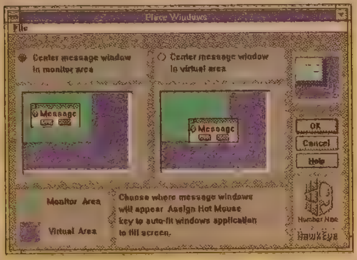
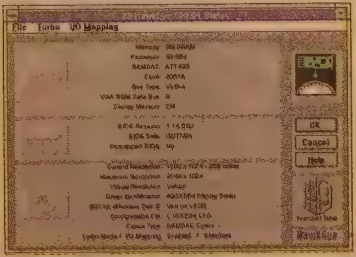
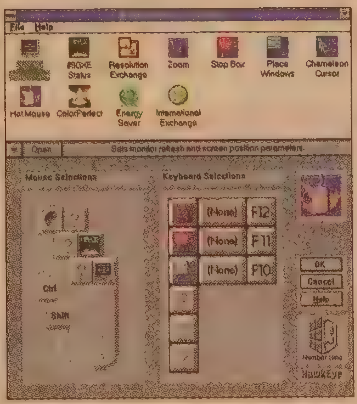


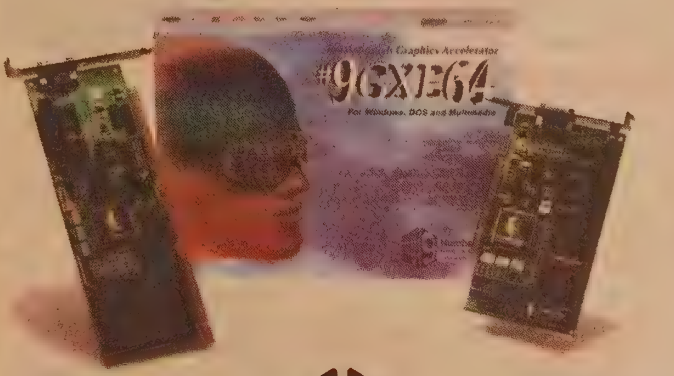
Place Windows: Quickly position dialog boxes to screen center or fit applications to full screen when in virtual desktop mode.

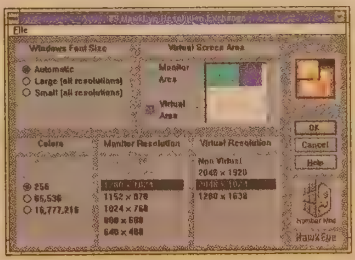


Instant Status: Hardware and software configuration data is immediately available to quickly pinpoint system state-of-health.



Hot Mouse: Instantly activate frequently used HawkEye for Windows applets by assigning them to mouse or keyboard hot keys.





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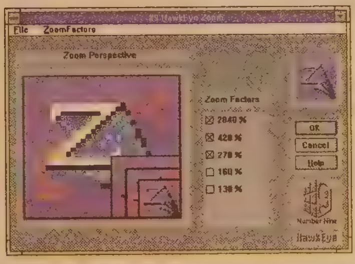

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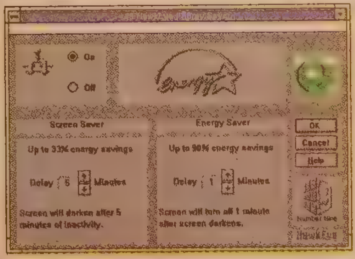

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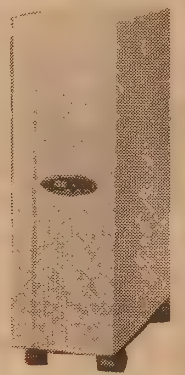

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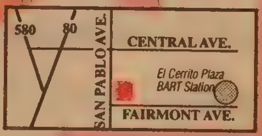

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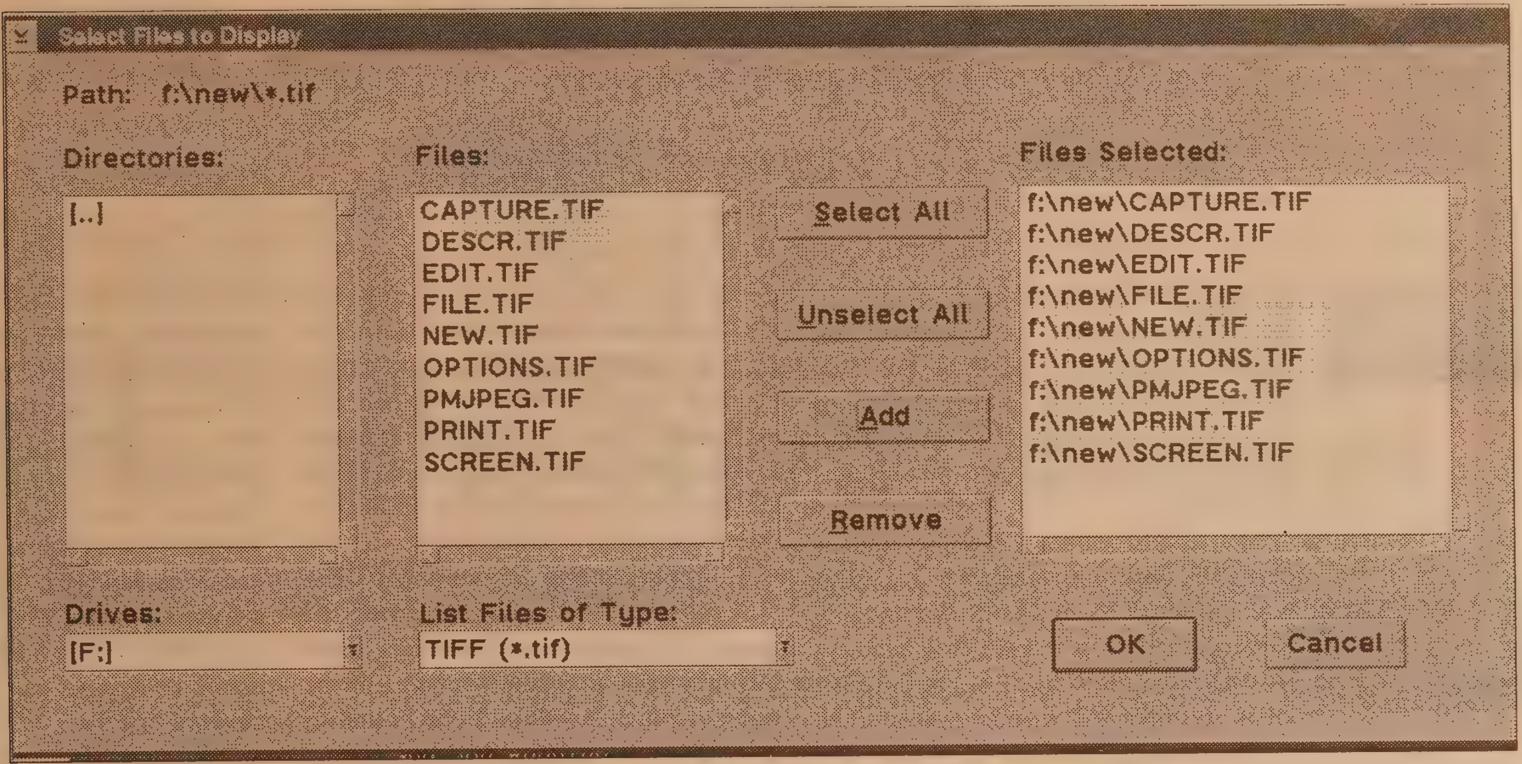
extension, e.g. *.TIF for the dialog to list only TIFF images for your selection. You can also do this using the simpler numbered options in the File menu.

Once an image is displayed, the File menu lets you convert it to a different format with the Save As option, Delete, or Print it. There are options to set up an OS/2 printer (if you have more than one) and, as Figure 4A shows, to customize the output by setting Print Options. The Slideshow option allows you to specify a list of images that you want displayed in a (customizable) sequence, as shown in Figure 4B. OK will display the images in the set order. Slideshows can be controlled manually or automatically (with a customizable delay) by setting the Slideshow Options in the Options menu (see Figure 5). For the average user who is not familiar with image editing, and neither needs it nor wants to fool around with it, the above capabilities are likely to be sufficient. Otherwise, PMJPEG provides basic options in the Edit menu, as shown in Figure 6, and they are explained in the manual. PMJPEG provides the facility to create your own images by capturing screens or components thereof.


Select Files to Display

Path: f:\new\*.tif

Directories: [..]

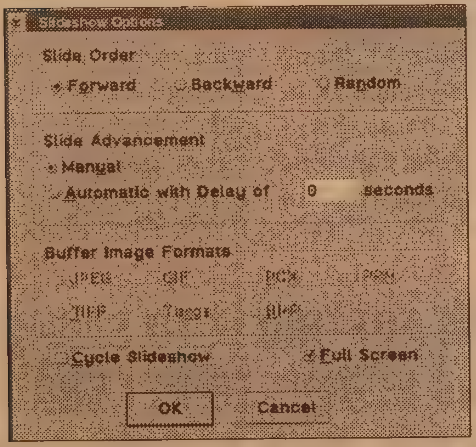
Files:
CAPTURE.TIF
DESCR.TIF
EDIT.TIF
FILE.TIF
NEW.TIF
OPTIONS.TIF
PMJPEG.TIF
PRINT.TIF
SCREEN.TIF

Files Selected:
f:\new\CAPTURE.TIF
f:\new\DESCR.TIF
f:\new\EDIT.TIF
f:\new\FILE.TIF
f:\new\NEW.TIF
f:\new\OPTIONS.TIF
f:\new\PMJPEG.TIF
f:\new\PRINT.TIF
f:\new\SCREEN.TIF

Drives: [F:]

List Files of Type: TIFF (*.tif)

FIG 4b.


Slideshow Options

Slide Order
● Forward ○ Backward ○ Random

Slide Advancement
● Manual
○ Automatic with Delay of 0 seconds

FIG 5.

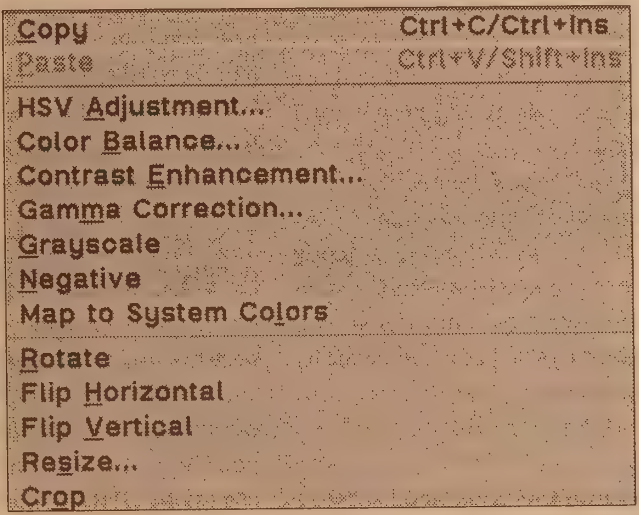


FIG 6.

COMMENTS

PMJPEG is a simple-to-use, well-performing utility for basic image processing. It is quite fast given the size of graphics files. With 16MB of RAM free (out of 28MB) it takes about eight to twelve seconds to display a 1280 x 1024 grayscale TIFF file, or a 256-color JPEG (compressed) file.

The variation in versions and implementations of graphic format standards makes it very difficult to avoid quirks, and this is true for PMJPEG too. For example, when reading TIFF files generated by another utility, PMJPEG issued two warnings which are incomprehensible to the average user, who is asked to OK continuation without an understanding of the message's meaning. It turns out that the warnings denote incompatibility of the files with the specific version of the TIFF standard supported by PMJPEG. If so, it would be a good idea to include in the warnings information that the user can understand too (the warnings can be turned off altogether).

One could quibble that the installation procedure could be a bit more flexible (e.g. letting the user decide which folder he wants created where); that the Save All Options belongs in the Options, not File menu; and that the manual needs to reduce some of the rather too technical details (an Appendix would be more appropriate) and extend the information for the user. But these are minor in the context of what the program is currently supposed to do, and what it does.

More important is to realize that PMJPEG seems like a good start for an OS/2 document manager, as currently there is none. A thumbnail interface, scanning capabilities, and support of more file formats come to mind. The developer is considering some such extensions. ■

Asserting Your Independence

The More Things Change, The More They Stay The Same

BY BENNETT FALK

UNIX

One of the guiding principles of early UNIX systems was the notion of "device independence": an operating system should behave more or less uniformly, regardless of what sort of terminal or printer or modem it must interact with.

The UNIX command line interface is part of the device independence legacy, as is the practice of maintaining databases (termcap, terminfo, printcap, modemcap) that describe the capabilities of different kinds of peripherals that might get attached to UNIX systems.

This is a very conservative principle. At its worst, it seems to impose a "lowest common denominator" of functionality: don't let any of the terminals do anything that all of them can't do.

The good people who invented the termcap database had problems enough coping with a world that included both hardcopy terminals (the "teletypewriters" from which we get the acronym "tty") and full-screen terminals ("glass ttys"). They could hardly have foreseen what terminals (not to mention workstations) would be like two decades later.

Indeed, because user interface hardware changes so rapidly, device independence is a little like atheism. You can avoid a lot of grief by asking an avowed atheist exactly which god's existence is being denied. Device independence works the same way: which devices do we want independence from?

Today, the notion of device independence seems quaint. It is a reminder that UNIX was not invented by hardware-manufacturing robber barons, but by professional and academic researchers who needed a system that would be workable regardless of what their capital budgets could afford and that would not be rendered obsolete by the arrival of new technologies.

Things are subtly different now. UNIX still provides a measure of protection against obsolescence, but now it is driven by the companies that make the hardware, none of which is willing to be bound by common denominators. Now the denominators are largely proprietary, and device independence has fallen into something like disrepute. The hardware and software technologies for user interfaces have become very sophisticated, and it would be something like a sin not to use them.

THE NET: LAST STRONGHOLD OF DEVICE INDEPENDENCE?

For the last year or two, however, we've been treated to an odd flashback as people everywhere have become intoxicated with the Internet. The main vehicle for getting people on the Internet has been dialup access to UNIX "shell" accounts with a timesharing service, something that looks suspiciously like a return to ASCII terminals and device independence.

(Internet hosts don't *have* to be UNIX-based, but many of them are. The popularity of UNIX machines on the Internet isn't accidental. The UNIX vendors have done an excellent job of bundling network services based on the Internet protocol with the operating system itself.)

A UNIX shell account is just a login account: a password-protected user name that is associated with a home directory. There's nothing particularly fancy about it. Thanks to the UNIX heritage of device independence, it doesn't make much difference what kind of computer or modem or software you use. Your dialup connection to a shell account doesn't require special hardware: it works over virtually any sort of modem.

The scenario for getting connected is a familiar one. You run the terminal emulator, connect to your modem, dial the number of the timesharing service. When the modem on the other end of the line answers, you receive a login prompt. After logging in, you can work interactively using your home computer just as you would an ASCII terminal connected directly to the timesharing system.

If the timesharing computer happens to be connected to the Internet, you can meander all over a global network doing what you like as long as you don't want to do anything that an ASCII terminal can't handle. There are relatively bug-free ASCII client programs for all the common Internet applications. Working from a dialup shell account, you can use gopher and the World Wide Web in character mode to reach the same information that everyone else reaches. You just won't be able to look at bitmapped images right away. You'll have to download them for viewing later.

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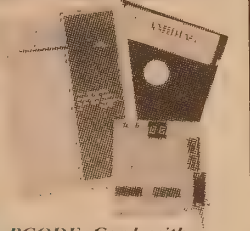

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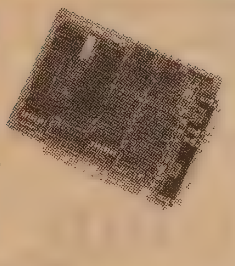

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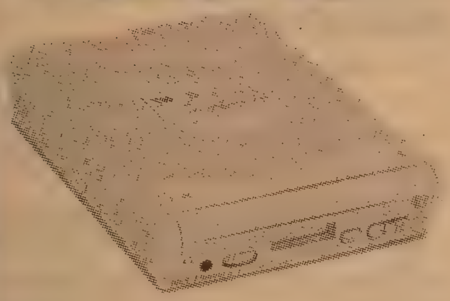

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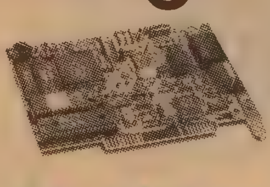

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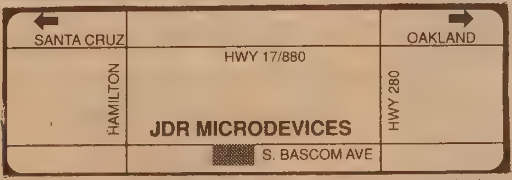

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THE FLY IN THE VIRTUAL OINTMENT

As attractive as this sort of access may seem, it does have its drawbacks. One of these is largely psychological: dialup access just feels terribly retrograde. Your home computer probably runs a graphical user interface of some sort. When you access the Internet over a dialup connection, your computer's very fine color monitor, its undoubtedly wonderful mouse, and its ability to display graphics go unused.

There's also the problem of downloading any files you collect from the Internet. Through a dialup connection, your home computer is simply invisible to the Internet, so every file you retrieve with FTP and gopher and all the other Internet applications arrives in your directory on the time-sharing computer. A separate step is required to bring the file to your home computer. FTP will bring a 1MB file from Australia to San Jose in about twelve seconds. Using kermit to get that file from the time-sharing system in San Jose to your computer across town could take a couple of hours.

And finally, there's the problem of having to know something about UNIX. This is a real problem for a lot of people whoare interested in the Internet but could care less about UNIX. This burden of knowledge is the real cost of device independence: the user has to supply a lot of intelligence that might otherwise be delegated to a machine or a piece of software. If you happen already to know something about UNIX, that cost may well be marginal. But, if you're completely new to UNIX, the cost may appear to be prohibitive.

INDEPENDENCE: THE NEXT GENERATION

Fortunately, device independence really is relative. When devices get smart enough and cheap enough, it's just plain silly to assert your independence of them, and in the case of Internet access this has begun to happen. The lowest common denominator for Internet access isn't as low as it used to be.

First of all, fast modems have gotten cheaper. If your goal is Internet access, a modem that will handle 14.4KB is almost a necessity. Of course, this is just as much a benefit to the dialup shell account user as it is to the next generation.

Next, the software to extend the Internet protocol to a desktop computer over a serial line has become a commercial reality. Implementations of the Point-to-Point Protocol (PPP) are now plentiful. (See the "PPP Information" sidebar.) PPP allows your home computer to connect to the Internet as a full-fledged Internet host via a phone connection over a regular voice line. This is much cooler than an interactive dialup session, but only if your modem is fast.

Finally, there has been a tremendous effort to develop GUI-based Internet applications. If you want to run gopher under Windows, you have a choice between several gopher clients. There's a Windows version of the Mosaic browser for the World Wide Web. All this is resulting in better (well, more stable) software that anyone can collect from the Internet itself. In addition to the software that is published through the Internet, the number of commercial products to integrate the most common Internet applications is also growing. (If you have an Internet access

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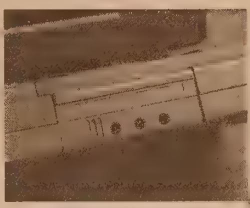

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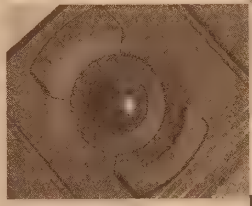

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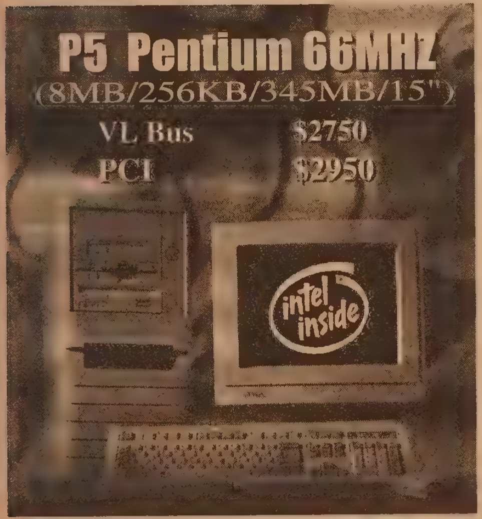

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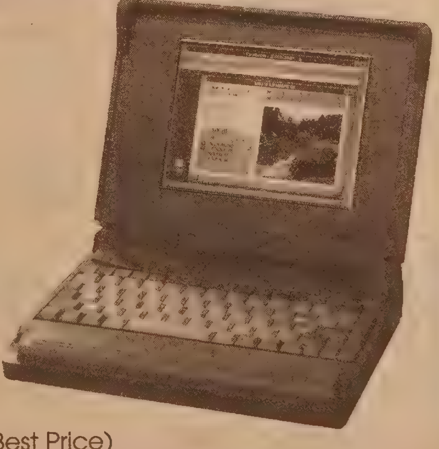

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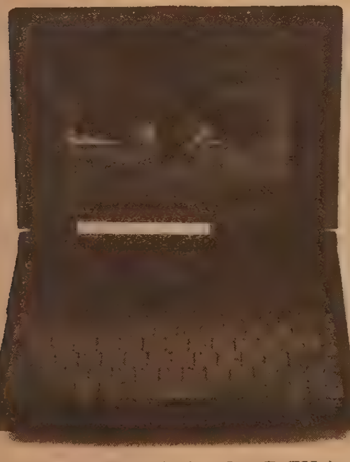

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provider, chances are that company is about to go into the software business by providing an integrated interface to the Internet.)

PPP IN PRACTICE

All this activity means that the Internet connection of the very near future will be different. You'll still use your home computer and a modem, but the modem will be faster. In place of a terminal emulation program, you'll have a different piece of software to handle the chore of dialing, connecting, and logging in. Instead of starting an interactive session, however, this software will manage a PPP session. In this session, your computer will have an Internet protocol address all its own.

Once the PPP connection to the Internet is established, it will slip quietly into the background. You can run the Internet application of your choice on your own computer, under the user interface you usually use with all its graphical capabilities. Technically, your Internet access still comes from the time-

PPP INFORMATION

PPP information used to be hard to find, but that's rapidly changing. The newsgroup "comp.protocols.ppp" hosts ongoing discussions of the protocol and the products that implement it.

A nicely detailed FAQ (Frequently Asked Questions) document is maintained by the hosts of comp.protocols.ppp and posted periodically to that group and to news.answers .

The PPP FAQ includes pointers to free software available through the Internet as well as a summary of commercial packages that implement PPP.

Two of the established commercial PPP implementations are:

- PC/TCP from FTP Software, which includes DOS-based network software with clients for both DOS and Windows. (FTP Software, 2 High Street, Andover, MA 01845. Phone: 508/685-4000. Email: info@ftp.com)
- Chameleon is a Windows-based network package that includes clients for the common TCP/IP services (FTP, TELNET, etc.) and clients for some Internet applications (gopher and a news reader). There is a serial-line-only version named Internet Chameleon. (NetManage Inc., 10725 North De Anza Blvd., Cupertino, CA 95014. Phone: 408/257-6405. Via gopher: gopher.netmanage.com)

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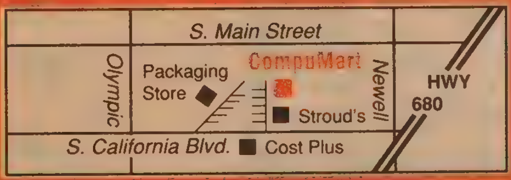

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sharing machine, but you don't need to know anything about that computer or how to use it.

If this is so great, why isn't everyone doing it already?

PPP access to the Internet is generally more expensive than dialup shell accounts. This is strictly a function of how the Internet access providers structure their fees. It's relatively easy to find a shell account for a fixed rate; PPP accounts tend to have a connect time charge tacked on to the flat rate.

Additionally, PPP software is more expensive than terminal emulation programs, but prices are coming down. (The manufacturers are beginning to realize that PPP can be sold independently of a conventional TCP/IP product.)

Configuring PPP can also be relatively difficult. You'll have to piece together instructions from the software vendor and your Internet access provider, but it is at least no more difficult that learning UNIX, and after all, you only have to configure PPP once in your lifetime.

Finally, there's the performance issue. Almost everything you do on the Internet will use a client/server connection of some sort. With a dialup shell account, your modem is between you and the client program you run on your interet access provider's computer. The connection between the client and its server happens over very fast lines. With PPP, the client programs are run from your computer, and consequently your modem is between the client program and the server it connects with. This makes a big difference: it stretches out all of the client/server interactions you have over the network. FTP'ing a 1MB file from Australia directly to your desktop via PPP will take a lot longer than twelve seconds, but still a lot less time than the kermit file transfer would take.

The annoying thing about PPP performance is not the speed of file transfers, however, but the amount of time it takes to do things you know are trivial, like scrolling back and forth in a large PostScript document or downloading a list of the names of all 5000 USENET news groups. Waiting for that list, you begin to think that the device you really want to be independent of is your brand new, "fast" modem.

It's always something. ■

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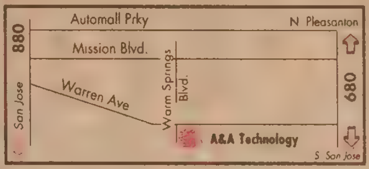

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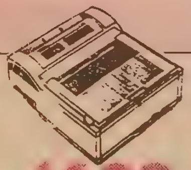

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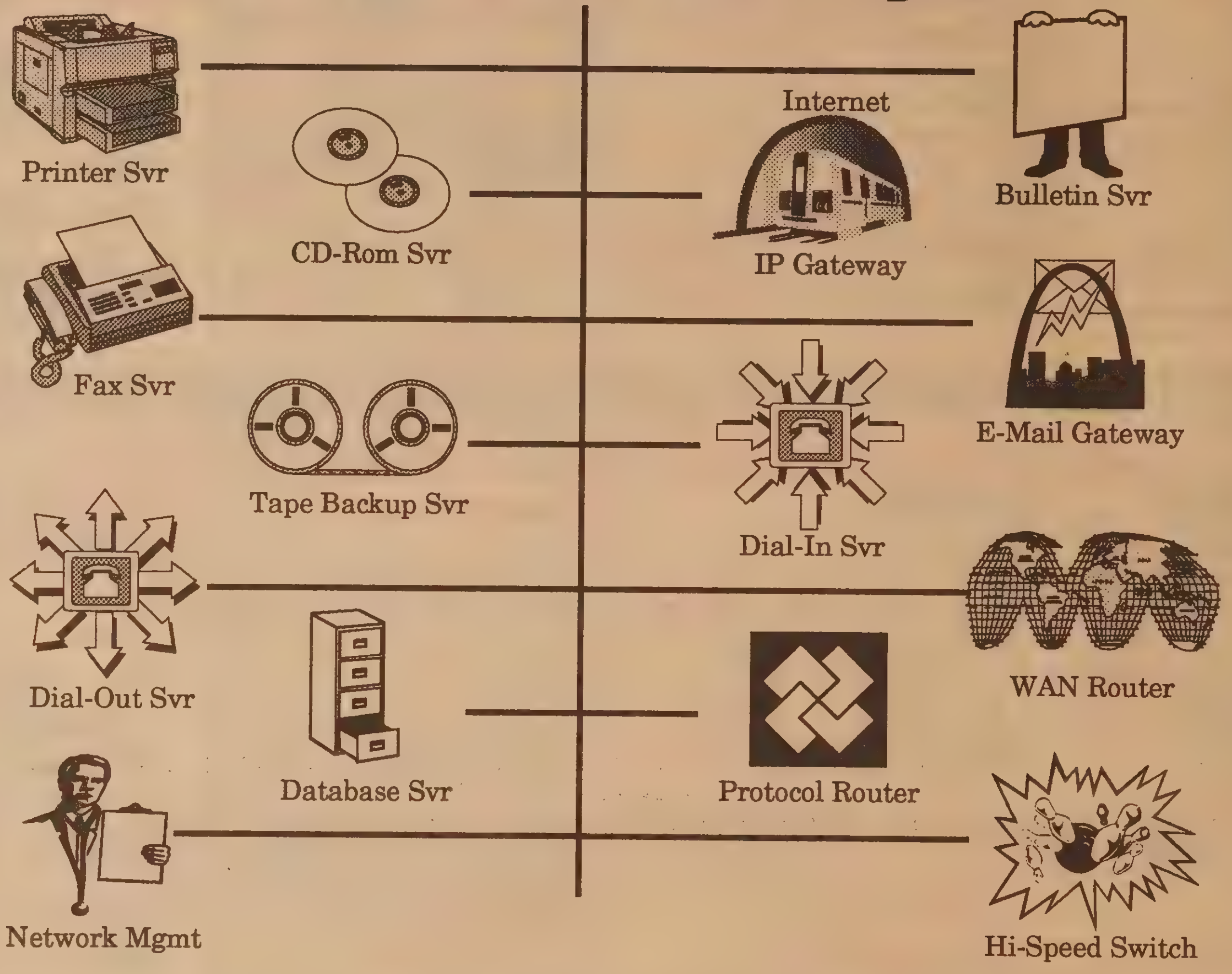

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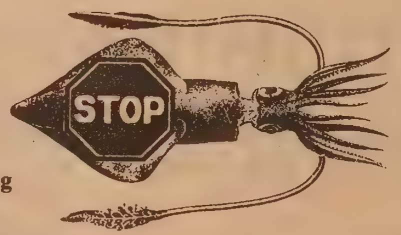

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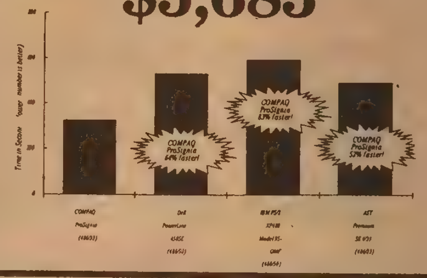

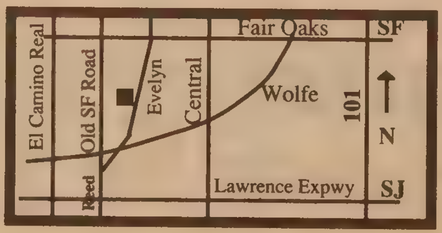

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Electronic Mail On The Internet

A List Of The Top Ten Ways Not *To Use Electronic Mail*

BY JOHN S. QUARTERMAN and SMOOT CARL-MITCHELL

Introducing this column about useful and interesting things to do with the Internet and with your Internet connection, let's begin with a discussion of the most widely used of all Internet services: electronic mail.

Within the Matrix of all computer networks that exchange electronic mail, there are several different mail styles, centered on networks like FidoNet, conferencing systems like the WELL and CompuServe, and on the Internet. With the Internet increasing so rapidly in size and importance, it has become the meeting place for all these different styles and the people who use them. In this environment conflicts happen, mostly due to mutual miscomprehension. Even more confusion results from people just joining the Internet who don't know the conventions and don't realize there's anything to learn.

We won't bore you with mechanics of reading a mail message, replying to it, or composing a new one. You already know how to do that using your local mail system. What we're interested in here is how best to use those basics. Etiquette, if you will. If there is a common set of conventions, it's probably those used on the Internet. Except, of course, there's no single set in use on the Internet, either. But we can list some things that will annoy almost everybody on the Internet who sees them.

Here's our list of the top ten ways *not* to respond to a mail message on the Internet.

10) No reply at all

Some people get the idea that electronic mail is exactly like paper mail, and let an incoming message sit around for days or weeks before replying to it, if at all. But online you don't need an envelope, a stamp, or even paper, and it's really not very difficult to send at least a note saying you got the message and will deal with it when you have time.

Some people think electronic mail is exactly like paper memos, and if they are on the Cc: list instead of the To: line, they think they are not supposed to reply. But online is different. If you have something to say, generally you should, regardless of which way your copy of the original message was addressed.

9) "I agree!"

Your mail arrives in the other person's mailbox interspersed with everybody else's mail. It's not uncommon for your correspondent to get a hundred messages a day, perhaps including other messages from you, on different topics. Or maybe the correspondent hasn't heard anything from you for days. A message comes in from you, saying nothing but "I agree!" With what? Maybe the Subject: header will be enough of a clue, but you could also include more context in the body of the message.

8) A long message quoted whole, followed by "I agree!"

Few things are more boring than reading through a long message again from end to end, looking for some response of consequence, only to find nothing but "I agree!" tacked onto the end. Lots of people stop reading after the first page of quoted text on their screen. If you want your message to be read, quote just enough of the preceding message to clarify the context, or say in your own words what you agree with.

Only slightly less annoying is "I agree!" followed by the entire preceding message quoted. The busy reader will still likely not read past the first page, assuming there's nothing there. The careful reader will read the whole thing, only to find nothing new.

Also, please don't indent the new text you add to a mail message. Some people include the text of a previous message and then intersperse their own comments, indented by a tab character per line. Most people will read this as being written by someone who either doesn't have a mail interface capable of doing better, or who doesn't know better. The almost universal convention of electronic mail is to indent quoted text, either by a tab character, or, more commonly, with a single character, usually ">," perhaps followed by a space.

Some people go farther and precede each quoted line with the initials or mailbox name of the person being quoted. This is often more than is necessary, but does no harm. A simpler convention is to make the first line of quoted text include the From: line of the original message.

The near newbie may have learned to intersperse comments, but not to put a blank line before and after, and not to trim the quoted text. So the reader gets to wade through a page or more of quoted text, only to stumble over a single line of new material wedged in the middle somewhere. This experience does not encourage taking the writer seriously.

The inverse is the multipage message on a new topic from somebody you've never corresponded with, which makes all sorts of assumptions about things the writer knows but you don't.

Include context. But only enough context.

7) Very long lines full of UMac quotesR

If you are composing mail on a Macintosh, tell your mail program to put in hard line breaks and to translate quotation marks into plain ASCII before you send the message. Some mail systems still truncate lines at 256 characters, or even at 80 characters. If you want your lines to be legible, don't make

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whole paragraphs single lines. People who like wide windows under the X Window System often make the same mistake. They can read lines 150 characters long, so why can't everybody else? Well, some can't, and most don't care to.

Some people, when told not to send long lines, instead send lines all 20 characters long. This just wastes space with no improvement in readability. Stick with about 70-character lines and most readers will be happy.

6) Pleze loose yer kutesy spelins. :-):-):-)

Some people insist on trying to make their message folksy and personable by using spellings like "yer" for "your," or by quoting a message preceded by a cutesy message like "from the cyberdesk of" or "you allegedly said." Such mind cruft may be amusing in personal messages, but it only annoys the reader who is trying to get something done.

Some misspellings are so common in the Matrix that no doubt Webster will adopt them soon. The most prominent of these is "loose" (pronounced loos, and meaning not tight) for "lose" (pronounced looz, and meaning to discard or cease to control). You may say you never knew how to spell and can't be expected to. The reader, given a choice of responding to a message that looks literate and one that doesn't, may not be expected to make allowances for you.

Smiley faces do have their places. :-) Mail is lacking in facial expressions and voice inflections. But you can use that lack to concentrate on the sense, rather than spending a lot of time compensating for something that isn't there.

Lengthy salutations and closings, as in paper business letters, are also usually superfluous in electronic mail. If you're sending and receiving a hundred messages a day, you don't want to have to write or read excess verbiage.

If you're sending business mail, make it businesslike. Say what you mean and mean what you say. Run it through a spell checker. Leave the personal chatter for a separate personal message.

5) MESSAGES ENTIRELY IN ALL CAPS

If you want to appear to be a newbie, a moron, or just extremely angry, do leave your cap lock key on for the entire message. If instead you prefer to have people read your mail, use mixed case.

Slightly less annoying are messages entirely in lower case, with no capitals at all. A correspondent who can't be bothered to use the shift key is less likely to get responses than one who takes the trouble to write a more legible message.

4) No paragraph breaks

Some conferencing systems evidently like to conserve screen space as much as possible, and people used to using them write messages with paragraph breaks indicated by a few dots in the middle of a line, like this..This is hard to read for someone used to the Internet convention of marking paragraph breaks with a blank line, like this.

Some people just don't bother to separate their thoughts into paragraphs, and instead ramble on for pages in one big mass of text.

Either convention is difficult to deal with if you want to respond to individual points by following each quoted point with your response, or if you just want to trim down the quoted text to retain only what you are responding to.

3) To: BUSINESS MEMO Date:

Some PC mail systems insert headers at the beginning of the body

Continued on page 278

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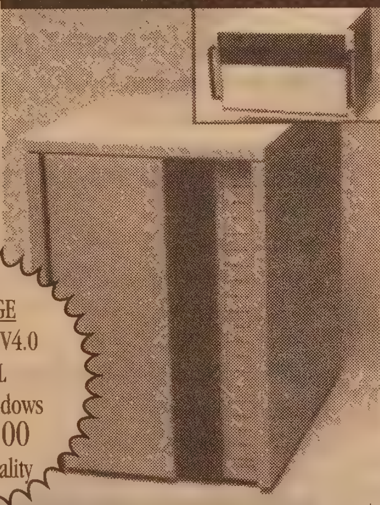

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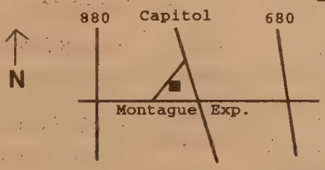

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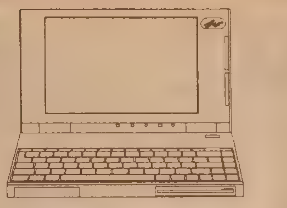

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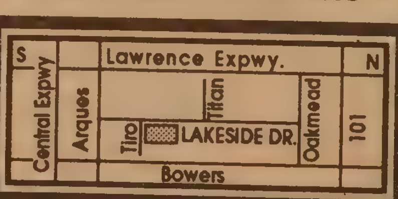

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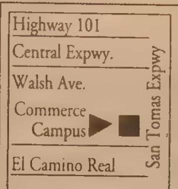

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T3300SL	2/4/6MB	135/210/299
T3100	2 MB	135
T2200SX, SXE, T1000LE	2/4/8MB	135/210/379
T1800 Satelite	2/4/8 MB	135/210/379

NEC MEMORY

Model	Size	Price
Prospeed 286, 386SX/16	1/2/4 MB	$125/185/269
Prospeed 386	2/4 MB	189/475
Prospeed SX/20	1/4 MB	125/249
Powermate 386/25S	2/8MB	139/369
Powermate 486/25E, 486/33I	2/8 MB	135/365
Powermate Express Series	1/4/16 MB	135/225/689
Other Models		CALL

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Altima LSX	2/4 MB	165/249
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AST Premium Exec	1/4 MB	119/245
AST Power Exec 3/25	4/8/16 MB	CALL
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Chaplet Notebook	2/4 MB	155/249
Chicony 386SX	4 MB	198
Chicony 386SL/25	2/4 MB	149/229
DECPC 320P	2/4/6 MB	195/269/389
DELL 320N &212N	1/2 MB	99/125
DELL 320N, NC	2 MB	125
DELL 325N, NC	2 MB	179
DELL NL25, NL20	2 MB	179
Epson NBS3	1/4 MB	98/225
Everex Tempo LX	2 MB	135
HP 95LX	1/2 MB	159/279
IBM L40SX, N33/SX	2/4/8MB	99/189/389
IBM N51SX & SLC	1/4/8MB	99/155/299
IBM PS/2 N45 SI	2 MB	179
MAC PB 160, 180	6/10 MB	249/425
MAC PB 140, 170	2/4/6MB	89/175/229
MAC PB 100	2/4/6MB	89/179/239
Magnavox Metalis 386SX	4 MB	199
NEC Ultralite 286F	1/4 MB	99/199
Packard Bell 386SX	1/4 MB	99/229
Panasonic CF 170/270/370	1/2 MB	65/99
Sharp PC 8501	2 MB	125
Sharp 678/6881	2 MB	129
Sampo NB SX/26, SX/25	2/4 MB	145/225
TI Travelmate 2000	1 MB	110
TI Travelmate 3000	2 MB	135
TI Travelmate 4000	4 MB	229
Zenith Turbosport 386 E	1/4 MB	125/325
Zenith Supersport SX	2 MB	189
Zenith Mastersport	2 MB	189

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Model	Size	Price
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PS/1 Consultant Essential/Expert	1/2/4/8 MB	79/99/189/320
386 Valuepoint	2/4/8 MB	99/179/325
486 Valuepoint	4/16 MB	189/595
PS/2 30-286	2 MB	99
50Z,55SX,65SX,70	2/4MB	99/179
40SX, 35SX,35SL	2/4 MB	99/179
70A21, A61, 121	2 MB	135
80-11, 121, 311	4 MB	245
95,90,P75, PS/1 Pro	2/4/8 MB	135/129/335
16 Bit Exp Bd For 50, 50Z, 60, 65SX	0K	179
32 Bit Exp Board for all 70 & 80 models	0K	189
RISC 6000	16/32/64 MB	745/1490/2890
Other Models		CALL

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Model	Size	Price
Bravo 3/33(LC) 325S	2/8 MB	$120/325
Bravo 486/25 & 4/33	2/8 MB	135/345
Bravo 486LC	4/8/16 MB	189/325/595
Cupid-32 Board	0K	239
Premium 386C	4 MB	189
Premium SE 450	4 MB	189
Premium 386/25, SX,33,486/25	1 MB	85
Premium II 386, 486	1/4 MB	85/189
Executive Notebook	4 MB	189
Other Models		CALL

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SPARC 10	16/64 MB	745/CALL
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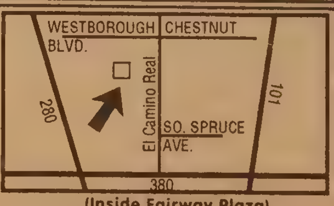

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Pentium P5-60/256K PCI	$1021	$1263(*)
Pentium P5-66/512K VLB	$983	$1115(*)
Pentium P5-60/512K VLB	$916	$1049(*)
486DX4-100/256K VLB	$832	$965
486DX2-66/256K PCI	$553	$804(*)
486DX-33/256K PCI	$432	$683(*)
486DX2-66/128K ISA/VLB Intel	$428	$561
486DX-50/128K ISA/VLB Intel	$442	$575
486DX-33/128K ISA/VLB Intel	$307	$439
486DX2-66/128K ISA/VLB -AMD	$376	$509
486DX-40/128K ISA/VLB -AMD	$276	$408
486BL-75/256 IBM VLB w/Math-Co	$465	$710 (*)
486SLC2-66/64K IBM VLB w/Math-Co	$260	$393
486DX2-66/256K Genoa VLB	$475	$608
486DX-40/256K Genoa VLB	$322	$455
486DX-33/256K Genoa VLB	$354	$486
486DX2-66/256K NICE EISA VESA	$582	$715
486DX-40/256K NICE EISA VESA	$430	$562
486DX-33/256K NICE EISA VESA	$461	$593
486SX-25C VLB	$120	$252
386DX-40/128K ISA	$84	$217

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- * 512K SVGA Card
- * 101 Enhanced Keyboard
- * Enhanced Case w/230 Watt Power Supply
- * Microsoft Compatible Mouse+ Mouse Pad

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PentiumP5-75/256KVLB	1932
PentiumP5-66/256KPCI	1794
PentiumP5-60/256KPCI	1718
PentiumP5-66/512KVLB	1679
PentiumP5-60/512KVLB	1619
486DX4-100/256KVLB	1538
486DX2-66/256KPCI	1259
486DX-33/256KPCI	1138
486DX2-66/128KISA/VLBIntel	1134
486DX-50/128KISA/VLBIntel	1148
486DX-33/128KISA/VLBIntel	1013
486DX2-66/128KISA/VLBAMD	1082
486DX-40/128KISA/VLBAMD	970
486BL-75/256KIBMVLBw/Math-Co	1165
486SLC2-66/64KIBMVLBw/Math-Co	954
486DX2-66/256KGenoaVLB	1181
486DX-40/256KGenoaVLB	1028
486DX-33/256KGenoaVLB	1060
486DX2-66/256KNICEEISAVESA	1288
486DX-40/256KNICEEISAVESA	1135
486DX-33/256KNICEEISAVESA	1167
486SX-25CVLB	816
38640/128KISA	772

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-[illegible] 1MB	[illegible]
-250 MB Hard Drive	[illegible]
-340 MB Hard Drive	[illegible]
-540 MB Hard Drive	210
-IDE VESA [illegible]	10
-Medium case	15
-Full Tower	[illegible]
-Logitech Mouse	[illegible]
-Microsoft [illegible]	[illegible]

BASIC SYSTEM includes: Motherboard &CPU, 1MB RAM, 1:1 2HD/2FD controller, w/ 1P/2S/1G, 1.2 or 1.44 MB FD, enhanced case w/Power supply, 101 Keyboard.

HARD DRIVES

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170mb(IDE)	180
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250mb/14ms(IDE) Conner	210
260mb(IDE)	235
340mb/13ms(IDE)	250
420mb/12ms(IDE) Conner	265
540mb/12ms(IDE) Maxtor	390
540mb/11ms(SCSI) Quantum	425
1.0 GB -10ms (SCSI) Fujitsu	738
1.0GB - 13ms (SCCI) Quantum	723
2.0GB - 13ms (SCCI) Quantum	1398

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Diamond SpeedStar Pro ISA w/1MB	105
Diamond SpeedStarPro VLB w/1MB	105
Diamond Stealth 24VESA Localbus w/1MB	145
Diamond Stealth Pro VRAM w/1MB/2MB	230/300
Diamond Viper VESA Localbus w/2MB	345
Diamond ViperPCI w/2MB	345
Diamond Stealth PCI	220
SPiDER 32VESA Local Bus w/1MB/2MB	93/143
SPiDER 32VLB Plus w/1MB/2MB	100/150
SPiDER BlackWidow VLB w/1MB/2MB	145/200
SPiDER BlackWidow Engine ISA 1M/2M	145/200
SPiDER BlackWidow Plus w/1MB/2MB	185/245
SPiDER 256 Cache VLB w/1MB/2MB	137/177
SPiDER 64 VLB/PCI w/2MB/4MB	207/307
Orchid Farenheit ISA 1280Plus w/1MB	125
Orchid Farenheit Localbus w/1MB	145
ATI Graphic Ultra Pro ISA w/1MB/2MB	175/235
ATI Graphic Ultra Pro VLB w/2MB	300
ATI Utra Plus VLB 2MB DRAM	270
ATI Ultra Pro EISA w/2MB VRAM	340
ATI Graphic PCI w/2MB	325

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Mitsumi double speed CD ROM (215ms)	158
SONY CD ROM 33A Double Speed	150
NEC triple speed 450KB OEM/Orig.(190ms)	370/470
TOSHIBA CD ROM 3401 (200ms) Internal	295
TOSHIBA CD ROM 3401 (200ms) External	380
Plextor CD ROM DM 3028 Internal	285
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NEC 3FGE/ 4FGE	555/610
NEC 5FGE/5FGP	975/1,080
NEC 6FGP/3V	1,960/465
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MAG 17FG (1280x1024,0.26)	840
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HITACHI CM-2095 20"/2087 20"	1,210/1,465
HITACHI CM-2187 21"	1,840
HITACHI CM-1588MV	450
Viewsonic 4E/6E/14E	260/275/325
Viewsonic 15E/15	365/435
Viewsonic 17/17G	925/800
Viewsonic 20/21	1,480/1,710
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Minimicro Non-interlaced Monitor 0.28	225
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Adaptec SCSI 1522	79
Adaptect SCSI 1542CF/1542CF w/Kit	175/245
Adaptec SCSI 2742T	280
Adaptect EISA SCSI 2742T w/Kit	345
Adaptect SCSI 2842 VL w/Kit	273
Ultra Stor SCSI 24F EISA	315
Ultra Stor SCSI 34F VLB	248

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Panasonic KX-P2180/2123	155/215
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HP DeskJet 520/500C	295/375
HP DeskJet 560C (new)	590
HP DeskJet 1200C/1200C Postscript	1420/2139
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Zoltrix Fax Modem (9600F, 2400M)/ Win	40
Zoltrix Fax Modem (14400F, 14400M)	95
US Robotics Fax/ Modem 14,400	123
Microsoft compatible 3-Button mouse	10
Microsoft mouse serial/ bus	33/45
Logitech Mouseman serial (4000dpi)	33
Logitech Mouseman Bus (4000dpi)	45
Q-tronic Trackball mouse	29
Colorado Tape backup DJ-10120M	98
Colorado Tape backup DJ-20250M	158
Colorado Trakker 120MB	220
Colorado Trakker 250MB	330
Baby AT/ Mini Tower case w/230W PS	42
Medium Tower case w/230W PS	69
Full Tower case w/250W PS	83
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TEAC 1.2FD/1.44FD	43/38

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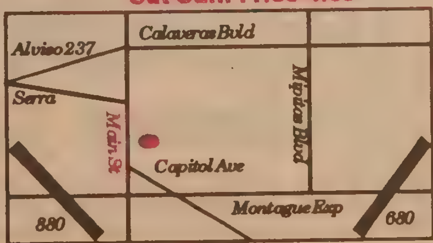

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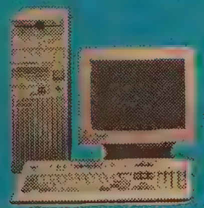

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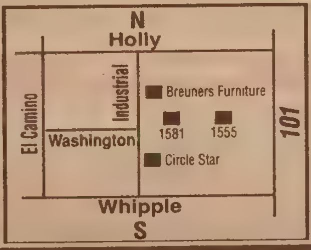

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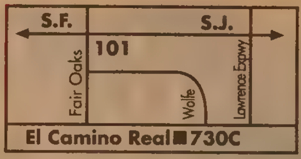

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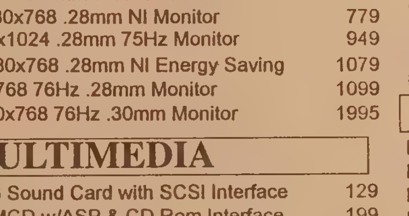

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ViewSonic 15E/15 15"	$379/439
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Diamond Stealth Pro VLB w/1MB VRAM	$249
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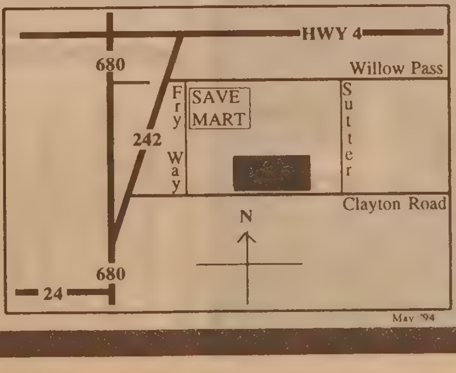

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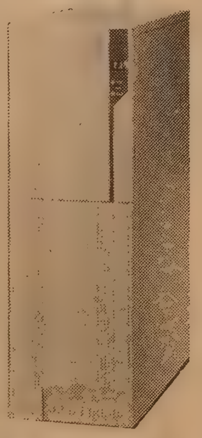

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RAM	16MB - 64MB	16MB - 128MB	16MB - 64MB	16MB - 96MB	16MB - 160MB	16MB - 256MB
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I/O	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P	(2) 16550 S, P
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Video Power (Mws)	50	50	50	56	56	–
Operating System	MS Windows NT	MS Windows NT	MS Windows NT	MS Windows NT	MS Windows NT	MS Windows NT
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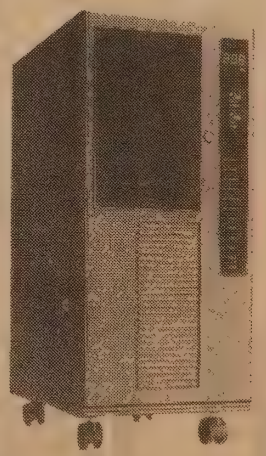

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......**$334**

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Paragon1200(dpi)24 bitclr,Photoshop	$1149

UMAX

UC 630 PC,600dpi max,24bit /256gray	$739
UC840,800dpi max,16.8 million clrs	$959
UC1260,1200dpi max,16.8 million clrs	$1275
UC1200SE,1200dpi max.,30 bitclrs	$2695

(Umax's are 8.5"x14"& come with 8 bit scsi cards)

EPSON

Action Scning 300dpiw/PicturePublLE&card	$875
ES-800C Pro 400dpi w/Picture Publ&scsi	$1375

Miscellaneous

Mouse Systems color hand-held 100-400dpi	$175
Mouse Systems 256gray $15 rebate	$125
LeoScan 610 sheet feed,300dpi/256 gray	$599
HP 2Pgrayscale/2cxcolor 300/400dpi	$519/1059
Fujitsu M3096G 11.7x17" scsi2 interface	$4500
Tamarack 6000/8000C 300/400dpi	$729/853
Relysis 9600	$3500
Westbrook File Majic OCR for hi-end scners	$285
Info 3GS 300DPI OCR/IPhoto Sheet feed	$375
Info SF-6C 600DPI 24bit Pict Pub Sht Feed	$450

PRINTERS

Miscellaneous

Star Micrnix NX1001 9 Pin. 120/220V	$134/144
Star Micronix 220v quantity of 100 only	$135
IGOR 132 9Pin Wide 220V (Cyrl..).In stock.......with any purchase	**$110**

EPSON

LX810 9Pin dot matrix,3 res. fonts,4k	$183
Action 2250 9 pin,50sheet,240cps	$123
LQ 570+ 24 pin Wide, 269 cps, 11 fonts	$251
LQ 1070+ 24 pin Wide,252cps,11fts	$389
LQ 1170 9pin/24 pin Wide,2 fonts	$399/619
Stylus 300 Inkjet 360dpi,150cps	$243
Stylus 800 Inkjet 360dpi,150cps,100sht	$293
ActionLaser 1500 300dpi,6ppm,1mb	$687

CANON

BJ 200e/230,360dpi,49k,7fnts,4ppm	$295/395
BJ10SX,110cps,360dpi,**Portable**	$245
BJC 600 Color,240cps,360dpi,100sht	$585
BJC 820 Color,240cps,4ppm,1MB	$1469

OKIDATA

OL 380dot mtrx, 24 pin, narr., 6 fnt, 23K	$217
OL400e/410e laser, 4ppm	$499/$675
OL810, 8ppm, 300dpi	$887
OL830 Plus, 8ppm w/ 2MB post script	$1055
OKI ML184T dot matrix, rugged industrial	$226
OKI ML320 320cps 9pin/ML520	$315/$369
OKI ML590/ML591 24 pin, 64K	$419/$565

PANASONIC

KX-P2123/KX-P2624	$245/$389
KX-P2124, N-Carr, 320cps, 360dpi, 12fnts	$318
KX-P1624, W-Carr, 192cps, 360dpi, 14fnts	$383
KX-P4410,5ppm,300dpi,28fnts,512k	$535

CITIZEN

GSX145 24pin wide, 160cps, 360dpi	$349
GSX200 9 pin, narr/wide	$168/290
GSX220 24 pin/CTZ Projet II 3ppm	$179/279
GSX230 24 pin.8 fonts, 360dpi, 270cps	$221
(color option for Citizen 80 col printers	*$45)*
GSX240 24 pin, nrw 300cps, 13 fonts	$281
Notebooks CTZPN48/CTZNP-IBM	$284/326

HEWLETT PACKARD (w/toner)

Deskjet 500/520 300dpi,120cps	$256/291
Deskjet310 Port. 3ppm, 6fts./w-feeder	$309/373
Deskjet 500C Color 300dpi,167cps 16k	$385
Deskjet 560C Color,3ppm,300dpi,80k	$561
Deskjet 1200C/p/s Color 2MB	$1375/call
HP4/4P/4Si/4L	$1375/945/2885/637
4M/4ML/4MP/4SMIX	$1365/975/1360/4225

NEC

Pinwriter3300 24pin wide,360dpi,80K	$345
Pinwriter6200 24pin narrow,360dpi,80k	$435
Pinwriter9300 24pin wide.360dpi 333draft	$890
Silentwriter superscript610,6ppm,256k	$633
Silentwriter95FX built-in fax,2MB	$1177
Silentwriter1097 600dpi/Script610	$1393/585

FUJITSU

10/10W Laser,10ppm,1/2mb 14/35fts	$830/942

All printers:Cash prices only, Original Manufacturer's Warranty applies, call for lead time. No returns on any printer purchase with this pricing.

MEMORIES, MATH-COs & CPUs

MEMORIES for IBMs

SIMMs

256 x 9 (3 chip)-70NS	$13
1M x 9 (3 chip)-70 Major brand	$42
1Mx 9 (3 chip)-70NS mixed brand	$39.50
1M x 9 (9 chip)-70NSMajor brand	$47
4M x 9 (3 chip)-70	$158
4 x 9 (9 chip)-70NS	$165
1M x 9 (3 chip)-60 Major brand	$46
4 x 9 (9 chip)-60NS	$170

ESIMMs(72 Pin)

256x36-70NS	$65
512x36-70NS	$104
1x36-70NS	$155
2x36-70NS	$325
4x36-70NS	$670
1x36-60NS	$168
2x36-60NS	$340
4x36-60NS	$675

SIPPS

256x9 (3 chip)-70NS	$16
1x9 (3 chip)-70NS	$46
1x9 (3 chip)-60NS	$49

DRAMs

1x1-70/80NS	$5.75/5.25
256x1-70/80NS	$1.75/1.60
256x4-70/60NS	$6.00/6.50

MEMORIES for MACs

MACINTOSH

1x2chip-70/80NS	$44/38
1x8chip 70/80NS	$46/43
2x8chip 70/80	$94/89
4x8chip-60/70/80NS	$154/145/139
16x8chip-70NS	CALL

APPLE UPGRADES

Centras & Quadra 600 series

256x32-70NS	$43
512x32-70NS	$82
1x32-70/80NS	$139/137
2x32-70NS	$284
4x32-70NS	$515
8x32-70NS	$1189

QUADRA 800 SERIES

512x32-60NS	$85
1x32-60NS	$143
2x32-60NS	$279
4x32-60NS	$649
8x32-60NS	$1298

POWER-BOOK SERIES

Please call for latest pricing

CACHE RAMs

32x8-20	$6.90
64x4-20	$7.50
8x8-20	$3.90
16x4-20	$3.95
64x1-20	$6.90
128x8-25	$39
32x8-15	$8.20
64x4-15	$9.80
8x8-15	$4.40
16x4-15	$4.95
64x1-15	$8.85
128x8-25	$49

CPUs & CPU FANS

INTEL

386 DX33	$55
486 DX 33	$264
486 DX 50	$412
486 DX2 50	$289
486 DX2 66	$397
486 DX-4 75	$620
486 DX-4 100	$735
Pentium 60MHz	$710
Pentium 66MHz	$792

AMD

386 DX 33/40	$50/53
486 DX 40	$225
486 DX2 50	$245
486 DX2 66	$339

CYRIX/TI

486 DLC 33/40	$75/85

CPU Fans

486 heat sink and fan	$8.95
Pentium heat sink and fan	$15.50

MATH-COPROCESSORS

INTEL

80387 SX 16/20/25	$45/64/75
80387 DX 16/20/25/33	$35/40/45/80

Overdrives - call for latest prices

IIT

3C87SX-16/20/25	$39
3C87SX-33	$39
3C87DX-25/33/40	$39

CYRIX

83S87SX 25	$49
83S87SX 33	$49
83D87-33	$49
83D87-40	$49

WEITEK

4167-25	$265
4167-33	$425

LASER EXT. MEMORIES

HEWLETT-PACKARD

HP IIP, IIP+,III,IIID,IIIP ..1/2/3/4MB	$78/119/158199
HP II, IID 2/4MB	$127/204
HP IIISi 1/4MB	$79/208
HP IV 4/8MB	$169/369
Deskjet 500, 500C, 550C.....256K	$98

PANASONIC

KXP 4410/20/30 ..1/2/3/4MB	$102/152/179/219
KXP 4450 1MB	$139
KXP 4455 ....2MB	$168

OKIDATA

OKI 400 ....1/2MB	$98/119
OKI 800/820 ....2/4MB	$127/196
OKI 810 ....1/2MB	$115/192

EPSON

Epson 6000 ....2/4MB	$138/209
Epson 4000/8000 ....1/4MB	$136/219
Epson 7000..........2/3MB	$128/178
Action laser II......2/3/4/5MB	$128/148/189/221

Special Terms and Conditions for this Section: CPU and Memory prices are changed on a daily basis; please call for the latest prices. These products when bought without systems may come with a shorter warranty - please enquire. We do not stock many of the above products - please call for availability&quantity discounts.

SOFTWARES

For Networking, Communications, Tape Storage Drivers, Networking Drivers, Multi-Media and Speciality Softwares also look in the corresponding sections.

UTILITIES

Norton Utilities V 7.0/Anti-Virus v2.1	$116/89
QEMM 386 V7.0	$69
AfterDark V2.0 WIN	$29
PC Tools V 8.0A	$57
Auto-Doubler/Disk-Doubler	$68/61
LapLink V5.0 FOR NETWARE	$74
MickyMouse/StarTrek Screen Saver	$39

DESKTOP PUBLISHING & GRAPHICS

Corel Draw V4.0/UPGRADE	$383/218
Pagemaker/WIN V5.0	$598
Harvard Graphics For Windows	$248
Norton Desktop WIN V2.2	$115
Micrographx Graphics Works	$158

DATABASES

Accesss for Windows	$145
CA-Clipper V5.2	$512
DBASE IV V2.0	$513
FoxPro For Win/DOS 2.5 Upgrade	$300/305
FoxPro LAN	$call
Paradox V4.0/WIN	$524/145
Q & A 4.0	$243
Superbase 2.0 WIN	$345
LOTUS SMARTSUITE	$448
Gupta SQL router/SQL server	$166
Gupta SQL for DOS	$2597
Gupta SQL gateway for netware	$3252

ACCOUNTING

CA-Accpac BPI Integrated	$148
CA-Acc. Simply Accounting DOS	$79
DAC Easy Accounting/Payroll 4.3	$94
Works for WIN 2.0	$129
MS Project 3.0 for WIN	$425

SPREADSHEETS

LOTUS WORK V3.0	$99
MS Excel V5.0	$292
MS Works for WIN	$123
Quattro Pro V 5.0 WIN/DOS	$54

WORD PROCESSING AND GRAPHICS

AMI Pro 3.1	$240
Grammatik	$73
Professional Write V 2.2	$159
MS Word 6.0 for DOS/WIN	$305/299
Word Perfect for DOS/WIN	$119/294
WordStar 7.0	$264

COMMUNICATIONS

Procomm Plus 2.01/WIN	$70 /97
WinFax Pro V 3.0 for WIN	$99
Norton PC Anywhere 4.5 Host/Rem	$65/86
CrossTalk for WIN	$129
Win for Workgroup v3.11 Add-on	$64
Winfax Pro Network Kit	$239

PROGRAMMING LANGUAGES & OPERATING SYSTEMS

M.S. DOS 6.2/UPGRADE	$48
M.S. Windows V 3.1	$63
DESQView /x V1.1	$ 163
Windows NT 3.1 /UPGRADE	$314/278

ACCPAC plus AUTHORIZED DEALER

AT ASA... ...WE DELIVER

NATIONAL: 1-800-REAL-PCs

SILICON VALLEY: 1-408-PCs-FOR-U

MICRO MARKETPLACE

MOTHERBOARDS & CONTROLLERS

ISA/EISA MOTHERBOARDS

286-12/20	$35/50
386SX-40	$59

THE STALLION SERIES

ISA 386DX-40 w/128k	$91
ISA 486SX25/SLC-33	$132/101
ISA 486DLC-40 w/128K	$141
ISA 486SX33 128k	$174
ISA 486DX-33/40/50 256k Cyrix	$254/276/394
ISA 486DX-33/50 256k Intel	$341/488
ISA 486DX2-50/66 w/256k Intel	$367/472
ISA 486DX2-50/66 w/256k AMD	$322/419
EISA 486DX-50 w/256kIntel	$642

VLB/PCI MOTHERBOARDS`

486/P24T

PLEASE ASK FOR GREEN PC 486 MOTHERBOARDS

MustangF 486SX-25 ISA/VESA	$182
MustangBZ 486DX-33/50 W/256K Intel	$352/499
MustangBZ 486DX-33/40 w/256K Cyrix	$265/287
MustangBZ 486DX2-50/66 W/256K Intel	$378/483
MustangBZ 486DX-2 50/66 256K AMD	$333/431
MustangT486-33/50/66Intel	$389/536/520
IBM Alaris 486SLC2-66 wo/w Math-Co	$265/293
IBM BlueLightening 486BL3-75	$507
Micronix 486-33/50/66Intel	$574/721/705
AMI S Voyager 486-33/50/66Intel	$619/765/750
Pegasus N 486-33/50/66 Eisa/Vesa	$496/642/627
Micronix 486-33/50/66 Eisa/Vesa	$804/950/935
AMI Ent IV 486-33/50/66 Eisa/Vesa	$742/889/873

PENTIUM P5/486DX-4 MHz

MustangBZ 486DX4-75/100 w/256k Intel	$717/829
CapricornO 512K VLB 60/66Mhz	$1013/1097
Capricorn P 256K PCI/I 60/66Mhz	$1069/1153
HCL Panther PCI/E 256K 60/66	$1271/1355

` *(CPUs: A-AMD; C-Cyrix; i-Intel; I-IBM)*

ESDI CONTROLLERS

Ultra 12F	$167
Ultra 12C 1/4MB	$270/386

RAID Controllers in Networking Section

ISA/EISA CONTROLLERS

IDE/MFM/RLL & FAST I/Os

Mustang IDE 2FD-2HD/4FD-2HD	$14/28
Mustang IDE w/ 2SPG	$15
Promise IDE Caching DC200 2FD/4HD	$97
Promise IDE Caching DC2032 2FD/4HD,IO	$155
Ultrastor 15C IDE Caching (upto 8MB)	$197
DTC IDE EISA/HFC RLL Card	$135/20**
UltraStor 22F Caching EISA	$340
FAST-PIG IDE,IO/IO w/16C550 Uarts	$41/30
ULTRA-IO 4S/3P 4 16C550 Bi-Dir	$116

SCSI

Future Domain Comp 16 bit	$50
Trantor T-130 SCSI Adapter	$54
ADAP 1522 16BIT Card/Kit	$76/142
ADAP 1542C Card/Kit	$172/249
ADAP 1542C+ Kit (w/Corel scsi)	$317
ADAP 1740A EISA SCSI-2 Card	$173
ADAP 2742 EISA Fast SCSI2 C/K	$319/361
Bus Logic BT747S C/KT	$340/497
DTC3290AS 7HD&4FD Caching	$441
Future Domain TMC1680 SCSI II C/K	$146/203
Ultra24F EISA SCSI Card/Kit	$325/351
Ultra 124 FEX 2 ch Int	$305
Ultra 124 FEX/3 3 ch Ext	$185
Ultra 124 FEX/5 5 Ch Ext	$347
AMI EISA SCSI II Cache w/wo PwrPk	$373/410
DPT Smart Cache 3 EISA SCSI	$331
Mylex DCE EISA SCSI Caching Ctlr.**	$228
Trantor348 Parallel Port to SCSI	$149

VLB/PCI CONTROLLERS

IDE

MustangS IDE/IO VLB/PCI	$20/36
DTC 2277 IDE Caching	$105
DTC 2278 IDE / IO	$29
MustangP IDE w/Fast IO w/OS2 drivers	$49
Promise DC-4030 4HD/2FD Caching	$121
Promise DC-420 w/512k IDE/IO	$104
MustangW 2008 2HD/4FD/IOw2.88	$44
MustangW 2018 2HD/4FD/2S(16550)1p/2.88	$50

SCSI

DTC 3270 SCSI I	$109
BusLogic BT445S Fast SCSI-II	$278
UltraStor 34F SCSI II 32k Card/Kit	$272/296
AMI SCSI II Caching wo/w Pwr Pk	$373/410
ADAPTEC 2842 SCSI II Kit	$294
BusLogic KT946S SCSI-2 PCI Kit	**$285**
National SCSI PCI Controller	**$68**

Cases - Power Supplies - KeyBoards - Mice

ROADRUNNER SERIES

Baby Desk/Mini Tower w/PS	$44/41
Medium Tower w/PS	$65
Full Tower(230W)/Big Tower(300W)	$78/143
Rack Mount W/PS	$290

DIAMOND SERIES (For Black add $5)

Baby Desk/Mini Tower w/PS	$71
Medium Tower Slim/Thick w/PS	$81/97
Full Tower w/PS	$106
File Server w/ 400W PS, 3 Fans 12 F/HDD	$394

External HDD/CD-ROM Cases

1HH w/PS 3.5"/5.25"	$65/73
1FH(2HH)/2FH(3HH) w/PS	$91/132
Removable IDE chasis & carrier	$37
SCSI Cables Int/Ext	$10/11

For Un-Interruptible Power Supplies see UPS's in Networking Section

KEYBOARDS AND MICE

Regular/Spill-Resistant 101	$16/17
MaxiSwitch/KeyTronic	$23/27
Small 11.5" 88 Keys/**BLACK 101**	$31
Russian/Japanese Keyboard	$21/59
KeyBoard w/Trackball Small/Big	$50/74
SEJIN J-Mouse (mouse under 'J' Key)	$95

Also line of European/Arabic KBs

S-Mouse/TBall	$9/20
LogiTech Ser/Bus bulk	$18/39
LogiTech Mouseman Cordless	$82
Microsoft white box S/B	$27/54
Mouse Systems white mouse	$16
Mouse Systems serial bus card	$15
BLACK SERIAL	**$16**

POWER SUPPLIES

PS2 200/230/300W	$34/40/51
PS2 200W GREEN PC	$44
Full Tower 230/300/400W	$49/63/126

MASS STORAGE PRODUCTS

FlOPPY DRIVES

YE Data 1.2/1.44MB	$45/36
Teac 1.2/1.44MB	$49/38
Teac Dual Floppy 1.2 + 1.44 MB	$104
Toshiba 2.88MB wo/w controller	$59/86

FLOPTICALS

IOMEGA 21MB w/1 Disk, Cable	$419
YE-DATA 21MB w/5 Disks	$392

HARD DRIVES

2.5" NOTEBOOK DRIVES

QUN 127 /256MB 16msec	$225/339

IDE

(Hard drive prices change often-please call)

DaeYoung 120 MB (when available)	$154
QTM 127MB 17 msec(when available)	$179
MXT130 18ms	$176
CON/QTM 170MB 17 msec	$176
CON 210 14msec	$195
WD 212 12msec	$195
ST214/260MB	$195/219
CON/WD250MB 14msec	$219
QTM 270/MXT 245MB 15ms.	$219
WD 340/MXT 340MB 12/14 ms	$255
CON/QTM 340MB	$249/256
CON 425MB	$257
WD 425MB 13msec	**$265**
QTM 540MB 11msec	$350
MXTR 540 8.5ms	**$375**
WD 540 12ms	$373
CON 540MB 12msec	359
MICROPOLIS 1/1.8GB 10ms	$792/1135

SCSI - 3.5"

QTM 42MB SCSI	$69
CON/QTM 170MB 17msec	$199
MXT 245/QUN 240MB 11msec	$249
MXT 340MB 15 msec	$330
CON 340MB 13msec	$325
QUN 540MB 11 ms	$379
MXT 540MB/CON 540 8/12 ms	$464/382
Fujitsu 1.2 GB 10msec 5year warranty	**$729**
DEC 3107 1.07GB,9 msec	$822
MXT 1.2GB 8 msec Magix	**$1089**
MICROPOLIS 1/1.8GB 10ms	$792/1135
Quantum 1.08GB FAST	**$715**
HP1.2GB 10.5msec	$775
ST1.2GB ST31200N 9 msec.,1"high	$759
ST12400N ST2.1GB 9MS	$1469
DEC 530MB,DSP 3053	$569
DEC1.07GB,DSP3107	$787
DEC 1.33GB,DSP3133	$994
DEC 1.6GB, DSP3160	$1048
DEC 2.1GB,DSP3210	$1409

5.25" SCSI

DEC 3.0GB DSP5300	$2046
DEC 3.5GB,DSP 535	$2312
DEC 4.0GB,DSP 5400	$2488

SUPER HARD DRIVES

Seagate Barracuda 3.5" HH (8 msec ....avg. seek, 4.17 msec lat., 7200 RPM)

ST11950N/ST12550N 1.7/2.5 GB	**$1515/1679**

FLASH CARD HARD DRIVE

ST 75A 1.8" 5.2MB IDE<1.5MS	$484
ST 710/720A 1.8" 10.4/20.9MB	$888/1177
ST 740A 1.8" 41.9MB IDE<1.5ms	$2068

TAPE DRIVES

(<500MB TAPE-BACKUPs)

Colorado 120 / 250MB	$99/169
Conner 250MB Int w/tape	$155
Colorado KE-10 Ext.kit w/card/card only	$105/37
FC-10 high perf card	$85
Colorado Trakker 250MB	$329
Archive 250MB w/QIC,150MB/min,1"H	$146
Archive Viper 250MB hh SCSI I/E	$335/425

(>500MB for PC / SERVER)

Viper 525MB hh SCSI Int/Ext 6MB/sec	$440/530
Archive Anaconda 1.3GB Int. SCSI 5.25"	$868
Conner Tapestor 1.36 DC6000 Int. SCSI 5.25	$825
Mountain 2/4GB Filesafe Int Dat 4mm	$1629/1959
Archive 4320 NT 2.0GB DAT 3.5"	$829
Archive 4324NT 4.0GB TURBO DAT 3.5"	$1075
Colorado 2.4 / 4.0 GB Qic 5.25	$929/1155
HP 2GB DAT 4mm Int/Ext	$920/980
HP 4-8GB DAT 4mm Int/Ext	$1080/1150
WANGDAT 3100 2.0GB 4mm Int/Ext	$902/1020
WANGDAT 3200 4-8GB 4mm Int/Ext	$924/1035
EXABYTE 750MB HH MINI Int/Ext	$692/860
EXABYTE 8205 5GB HH Int/Ext	$1595/1695
EXABYTE 8505 10GB HH Int/Ext	$2339/2505

(above drives require special contr & soft drivers)

TAPE BACKUP DRIVERS

Novaback for DOS//OS/2	$65
Novanet Multiuser NLM	$279
ARC Serve Solo	$175
SYTOS for DOS/NOVELL, GEN	$120
Conner Backup Exec for Dos/Win v3.3	$79
Conner Backup Exec for Netware v3.1	$259

MAG/OPTICAL (Rewritable)

TEAC 128MB 3.5" Int/Ext	$625/729
PinnacleTahoe 130 portable 3.5"Opti w/inter.	$999
IBM 127MB 3.5" Int/Ext	$833/943
Panasonic LF-7010 1GB 5.25	$2799
HP 1.3GB 5.25" SCSI-2 EXT	$2799
MAXOPTIC 1GB Tahiti IIM 35msec	$2260

REMOVABLE DRIVES

Syquest 44MB Dr	$249
Syquest 88/105MB Dr	$308/389
Bernoulli 44/99 Insider	$907/840
IDE: Upto 1GB removable kits	$39
SCSI: Upto 1GB Removable Kits	$138

DISKETTES & CARTRIDGES

Floppy 1.44 Bulk 20+/100+/500+	$.49/.44/.39
Floppy 1.2 Bulk	$.44
Tape DC2120 250MB..Formatted	$16
Tape DC 6250 5.25", 1/4" Cartridge	$25
Tape DC 6525 5.25", 1/4" Cartridge	$30
TK50 for DECs	$24
DAT 4mm 90 mtr HP/OEM	$20/14
DAT 8mm 112 mtr	$14
Syquest 44/88/105MB Cart	$?
Bernoulli 44MB/90/105MB 3Pk	$289/298
Mag-Opt 600MB/650MB 5.25"Rewrite	$98/98
Mag-Opt 1.2/1.3 Rewritable	$124/124
Mag-Opt 600/650MB Write once	$86/86
Mag-Opt 1.2/1.3 GB Write once	128/128
Mag-Opt 128MB 3.5"	$58
Mag-Opt 650/1.3 GB WORM 5.25"	$160/193

VIDEO ADAPTERS & MONITORS

ISA/EISA ADAPTERS

MGP	$13
VGA 256k	$28
Trident 512K/1MB	$39/59
Tseng 1MB	$76
Mustang 1MB Window Accel	$62
Diamond Stealth 24	$139
Fahrenheit 1MB	$143
Hercules Dynamite Pro 1/2MB	$166/211
Hercules Graphite Pro 1/2MB	$274/418
ATI Ultra Grpx 1MB w/Mouse	$214
ATI Ultra8514 1MBVRAM(dual monitor cable)	$176
ATI Ultra Pro 2MB (no mouse port)	$294
Genoa 7900 w/1MB	$95**
Genoa 8560 w/ 1MB	$171**
Genoa 6200	$36**
ATI Ultra Pro EISA 2MB	$316
AMI Fast View w/2MB Weitek P9000	$call
AMI Fast View EISA VGA Graphics w/1MB	$221

VLB/PCI ADAPTERS

(wm = winmark ver2.5)

MustangVT Trident 1/2MB	$70/115
MustangVC Cirrus Logic 5428 1/2MB	$81/126
MustangVS S3-805 1/2MB	$89/134
Spider 32 1MB/2MB,20 WM	$95/139
Spider 32 Plus 1MB/2MB	$98/145
Spider Blk Widow 1/2MB 54 WM	$137/200
DIAMOND Stealth 24vlb 1MB	$139
DIAMOND Stealth pro 1/2MB vram,36wm	$255/316
DIAMOND Viper 2MB,9000,50wm	$322
ORCHID Fahrenheit S3-805,1/2MB	$143/193
ORCHID Celsius 1/2MB	$216/266
ORCHID Kelvin 1MB	$160
Hercules Dynamite Pro 1/2MB	172/225
Hercules Graphite Pro 1/2MB	$274/418
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CAD MONITORS

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Translated by Taku Fujita

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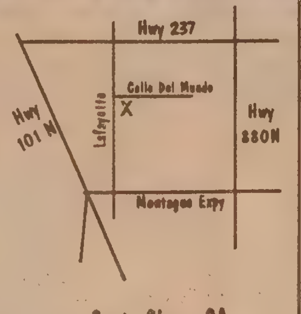

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Andrew Preston, Heidi Roizen, Diane Kreyenhagen, John Tompane, and Royal Farros of T/Maker with a few of their products.

How A Little Word Processor Company Found Happiness In The Content Business

Reinventing

Maker

When we last interviewed T/Maker's Heidi Roizen and Royal Farros in 1988, the company had just hired its fourteenth employee. Its word processor, WriteNow, the result of a then-serendipitous publishing arrangement with Steve Jobs, was a scrappy contender in the Mac market; the ClickArt clip art packages, with images ranging from Business Art to Christian Images, were a nice little side business; and the thriving company was just moving to larger headquarters in Mountain View.

So determined were Roizen and Farros, who then owned 99% of the company, to keep control of its evolution that they'd previously sold two successful products—PFS: First Publisher, aka ClickArt Personal Publisher, to Software Publishing, and ClickOn Worksheet to Borland for inclusion in Sidekick—when their popularity would have forced T/Maker to grow at uncomfortably rapid rates. Said Roizen at the time, "Our basic theory is that if you don't control your company, you don't control your destiny. We're always reevaluating this, but our current feeling is we'd like to grow without ever needing any outside investment. We have no debt, we have no venture capital, no outside investors, and no outside shareholders."

Things changed rapidly thereafter. The first VC money came from Hummer Winblad, to be followed by other investments. Meanwhile, WriteNow faced an ever-greater struggle against an ever-more-monolithic Microsoft, and the ClickArt business grew. Roizen and Farros looked at the changing world and concluded that, for small companies like theirs, competing in the application marketplace was an exercise in futility, and Content was the future.

Ultimately they sold WriteNow to WordStar, precipitating changes that both of them consider the company's darkest hour. Recalls Roizen, "I was six months pregnant, walking around raising venture capital. I remember the day I had to come in and lay off people, and here I was, this rolling thing coming in, and the baby's kicking, and I'm sitting there telling people they're losing their jobs, and I went home and thought, 'This is the worst day of my life. I hope what we're doing is right, because this sure hurt.'"

Things are much rosier these days. T/Maker's expanding product line now includes ClickArt products at price points for professionals and consumers, and its entry into multimedia is off to a promising start with the first in the ZoomBooks series for children, Four-Footed Friends. Other ZoomBooks are in the works, with Stradiwackius, the epitome of silly musical experimentation for kids, due in late April. Also in the works, in varying degrees of nondisclosure, are joint ventures with companies outside the computer industry, from business printers to television networks. (T/Maker, 415/962-0195)

*

When last we talked, you were a 14-person company owned almost entirely by you two, and you were saying "No growth, we don't want to be a big company. No VC for us, no sir..."

Royal Farros: [*laughs*] And it was three months later...

So you've redefined the concept of the company pretty thoroughly since then...

Heidi Roizen: We're looking at how do you make a small software company go forward in this era. When you're not Microsoft, what do you do? Which we hope we have an answer for.

First of all, Royal and I turned 30—unfortunately me first [*laughs*]—and I think you reflect on what are you doing at the company, what are you trying to accomplish, what are you trying to do in your personal life.

We found that our no-growth strategy had some problems. First of all, it meant it was hard to attract key individuals for the future, because they want to see some growth, some payoff, and some opportunity to build something.

Second of all, we wanted to see some personal payoff for this someday...

One day you realize that you don't want to work like a dog for the rest of your life?

HR: Or even if you *do* want to work like a dog for the rest of your life, at some point it's nice to have some personal freedom—when you're working this hard, some people build equity, others don't. We wanted to be ones who did.

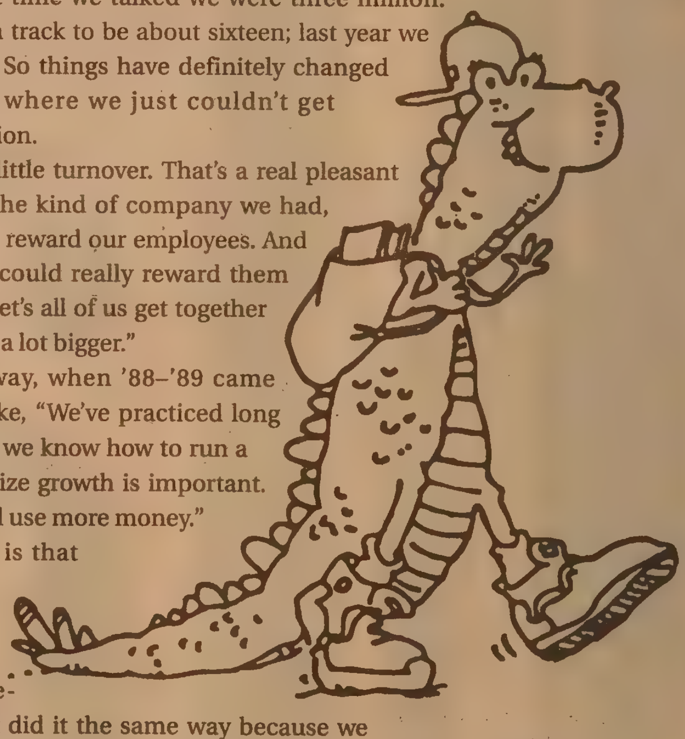
Beyond that, I think there's an issue of the company being able to do things. If the company's not growing, it doesn't attract products to it. It doesn't attract new ideas. It doesn't bring forth opportunities for the kind of financing you need to buy products from the outside and bring them in. We found we were constantly living a hand-to-mouth existence and we could never get above that $3 million level.

I think the last time we talked we were three million. This year we're on track to be about sixteen; last year we were about nine. So things have definitely changed since that level where we just couldn't get beyond three million.

RF: We had very little turnover. That's a real pleasant consequence of the kind of company we had, and we wanted to reward our employees. And the only way we could really reward them was to say, "Hey, let's all of us get together and make this pie a lot bigger."

HR: In a funny way, when '88–'89 came around, we felt like, "We've practiced long enough. We think we know how to run a company. We realize growth is important. We know we could use more money."

Another thing is that we almost got in a rut managerially, where we were running something, but we just did it the same way because we always did it that way. At a certain point you start thinking, "Could I be doing more? Could I be challenged?" Because it kind of gets boring, to do the same thing.



So in a way bringing on real venture and having millions of someone else's dollars and having a million-dollar bank loan and all sorts of crazy things to boost the company up is exciting.

We have three venture capitalists—Hummer Winblad; Bryan and Edwards,

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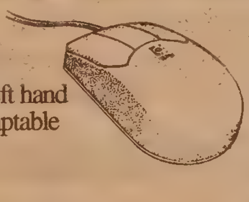

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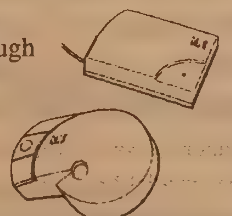

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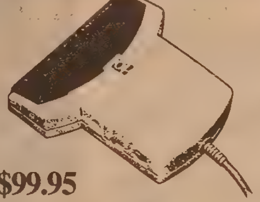

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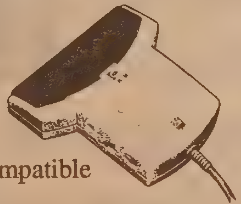

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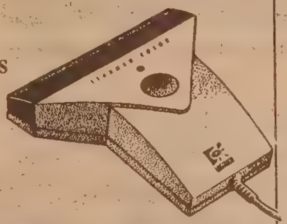

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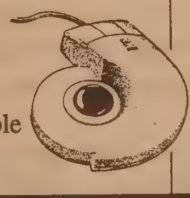
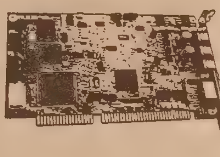


TrackMan II Combo
- Last year's version
- 3-Button
- Hi-Res thumb ball design
- Serial interface, PS2 Adaptable

reg. $139 **$39.95**

SOUND BOARDS



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- Compare to Sound Blaster Pro
- DOS or Windows
- New with warranty

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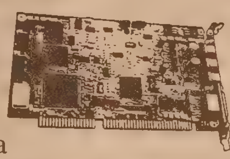

SoundMan 16
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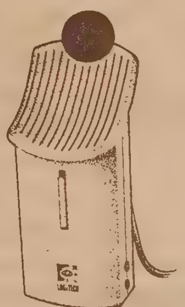

AudioMan
- Add sound to business applications
- Simple parallel port installation
- Great for portables, fully integrated
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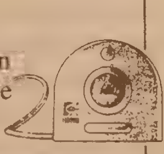
TRACKBALLS



TrackMan Portable
- Ideal for Portables
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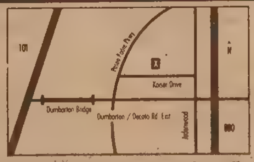

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which is a local old-line firm; and Draper Associates, which is a wild and woolly, relatively new venture firm, who got started about the same time as Hummer Winblad. They do mostly small seeds—they did Digidesign, that was one of their bigger ones. They did *Parenting magazine* and Upside, all kinds of things. They're kind of a crazy group.

So to make a long story short, the main reason we took venture capital in '89 was to make this company happen. But the reason we *had* to do it was the deal with WriteNow.

At the time, we had to buy out the source code from NeXT, and we felt it was imperative that we controlled the source code in order to be able to do upgrades. That cost us a lot of money, in the millions of dollars. We didn't happen to have a few million handy, so we had to go out and get it somewhere.

That was the driving force behind making the decision to get venture, but it was also the last straw—we had already sort of been ready.

The *Reader's Digest* version to get up to today: We banked on WriteNow on the entry-level, power-, low-cost Mac word processing market. The market took a while to get there; when it did, the integrated applications really found a place; and not being cross-platform killed our opportunities in corporate America, which was really where people were making the purchase decisions. The net result was, WriteNow was an opportunity, it had its cult following, but it wasn't a growth area, it just continued to stay where it was.

RF: We're really proud of what we did with WriteNow. I think we're the only word processor other than Word that's actually profitable. We're really proud of its history and its customers.

HR: About two years ago we really saw the writing on the wall with WriteNow. It consumes a lot of resources. It's Mac-only, which means it's kind of a cul-de-sac.

We didn't want to kill it, we wanted to see it continue. We did a deal that wasn't necessarily the most money, as opposed to being the best outcome for the product. What we needed to do was find a word processing company that didn't have a Mac version. So really, WordStar was a unique choice in terms of ensuring its longevity. We did a lot to make sure that the development team went with it, they all got jobs. They all continued to work here...

RF: One week they were on our payroll and the next week they were on WordStar's payroll, but their environment stayed the same.

HR: They worked here for over a year, through the 4.0 release.

RF: Meanwhile, for years we had this thing called ClickArt, and it slowly, slowly, slowly started to gain pretty impressive numbers. You couldn't run a company the size that we were back in '88, '89, '90 on ClickArt, but all of a sudden in '92, half our revenues came from WriteNow and half of them came from ClickArt. So now we were in the position of deciding if we were going to spin off one or the other.

HR: Number one, ClickArt was a bigger category than WriteNow. Number two, when we started looking at the company, we said, "Hey, quite frankly we're not making a lot of profit here, and what are we doing to move this business forward?"

RF: ClickArt was always the smaller product line, but it was growing at about 60% a year.

HR: Also it was less technically exciting. I think a lot of times in a company like this whose heart is in its development, it's not as interesting to do products that aren't development oriented. It's not as challenging.

ClickArt Cartoons
News
ClickArt

It's kind of Rodney Dangerfieldish to be a ClickArt company.

But we looked at all this, and we looked at where the market was going, and we said, "Let's be real serious about this. We have a company, we have investors, we'd like to make something out of this."

In a way we're lucky because we hit the wall before other people, and now you see the SPCs and the Borlands and all these companies having problems because they're relying on their old main-line applications, and here we were, a small company that was already getting kicked around early, so we had the glorious opportunity to revise our strategy early in the game.

We looked at the market and said, "There's a lot of new users coming into the market. There's a lot of people who are using image content. Everyone who's a computer user can use it. The channels are changing, the price points are coming down, there's all sorts of things that are happening that are pretty much the reason why ClickArt is doubling every year without our even doing anything."

RF: Prior to '92, people said, "Oh, that's that little clip art stuff." From '92 forward, people started saying, because of multimedia and because of Windows, "Oh, that's not clip art, that's content!" And all of a sudden it took on this brand new buzzword appeal, and it wasn't just the Rodney Dangerfield stuff.

It wasn't clip art, it was Intellectual Property!

HR: Yeah, exactly.

We started figuring out this stuff, and also the way that somebody buys that stuff, that it is a consumable—they use the images, they want new images. Royal said, "I can only sell somebody one word processor, but I can sell them a lot of ClickArt."

I remember one time a couple of years ago you were speaking at one of Dick Shaffer's conferences, and you said you'd looked at the figures for FaxMania and the figures for WriteNow, and the FaxMania unit sales were something like an order of magnitude higher than the sales for WriteNow.

HR: Right. And now, especially, we look at ClickArt, and it's a very different model. The whole business model has changed, too—we're now selling products that cost a lot less, that are less technical, that you have to have a lot more variety. The whole marketing issues are all so different.

So really the whole company had to reinvent itself around this new concept: that we're in the business of selling consumer software that's at this sub-$50 price point—the truth is really half our titles are at a sub-$30 price point.

RF: We learned something, though, from the previous period. To be profitable with WriteNow, even though we thought it was a great product, we had to merchandise the heck out of it, We really had to work the channels.

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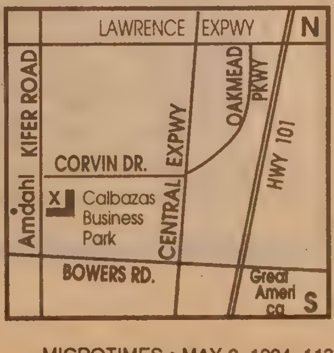

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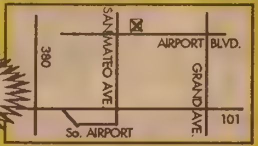

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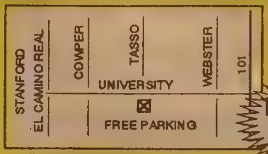

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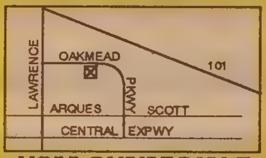

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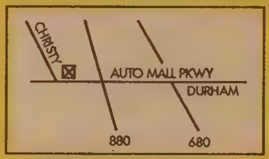

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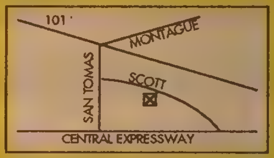

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So we took that, our ability to merchandise against all these giants, into the clip art marketplace, which gave us a tremendous leg up on all our clip art competitors, because it's certainly a lot easier to go up against some of our clip art competitors than it is to go up against Microsoft, or against Claris.

What we learned from merchandising in the '88–'92 timeframe played a huge role in where we are today.

HR: If you dissect it and said, "What did we do?"—

First of all, we said we have to be the best products, and we have to have the widest number of products. So we brought on board John Tompane, who's our VP of product marketing, who came from a consumer goods background. He's terrific—he's got a great design eye for packaging, and so he came on board to really consumerize the strategy.

Royal spent about six months buying other small clip art companies.

RF: If we were going to be a content company, we had to make sure we had a pretty imposing library.

Where does clip art come from?

RF: Oh, everywhere. You could sit down with your Mac, and whether you're artistic or not, you can create art. Well, people have gotten lots of products out there creating art, and they find they don't have the distribution, they don't really want to create a sales channel, they don't want to answer the phone... So there's lots of really great quality art out there.

We also got kind of creative in finding people who use art, who create big libraries of art, and don't know they're in the clip art business. We approached them and said, "We *are* in the clip art business, let us buy it." We actually found a couple of volumes of libraries from people like that.

HR: We do also commission some artists, where we go to them with a list of images we want and work together to create them.

We really work all over the board. We don't have internal artists on staff who make clip art, because we believe that's not the best use of our resources. The best use of our resources is to take clip art from wherever it comes from and create portfolios that make sense.

RF: Heidi was talking about us changing our business model.

Let's say it costs us ten units to create a piece of art. By us going out and being very selective in what we bought, but buying art on the market, we pay one unit. Now, we would bring it in and do some touch-up—we wanted to make sure we were essentially beta-testing the images and seeing that all the lines were edited out and all the color was nice and all of that. But you see that if you're going to fit into the consumer model, you can't be spending ten units for art, you have to be spending one unit for art.

HR: Royal touched on the hidden key to the business and why we've been successful—people view clip art as a very nontechnical business, but the truth is clip art is a very technical business, particularly when you're trying to do multiple platforms, dealing with issues of compression, installation, file format... You've got to understand size of image, color palette issues. All sorts of stuff that's really rather technical.

How does it look in black and white as well as color...

HR: Right, exactly. Printing...

RF: CGM, WMF, EPS... You talk to our testing group, and they'll probably tell you that clip art is an *incredibly* technical area.

And the users ultimately don't want to know anything about how technical it is.

HR: Right, and that's part of the trick, and again one of the reasons we brought John on board as somebody who would view it from the user's point of view, is to make this easy to do. But he also had a technical background.

And then we said, "Okay, where out there in the world do we have to make sure we win this year? Where are we already behind?"

We said, "The retail channel. Mail order—we can always beef up mail order.

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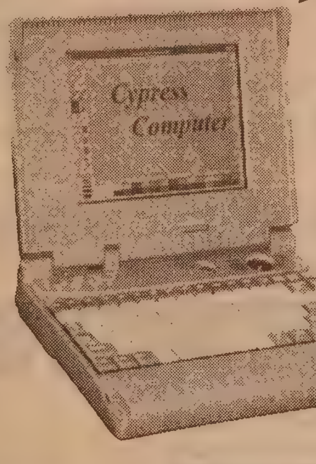

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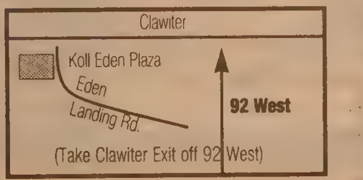

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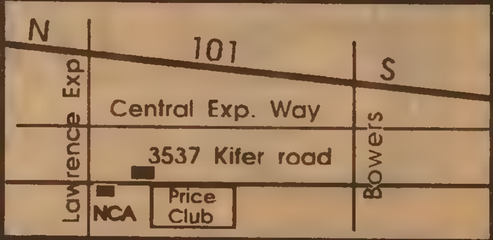

Direct mail—we can always beef up direct mail. Online isn't really there yet. But retail—if we don't win those shelves, someone else will go in and we're not going to be able to recapture them."

So we designed the whole strategy on product and packaging, really across the board on what we were going to release, working backwards from where the channels of distribution were. We said there were going to be superstores, the warehouse chains, the retail discounters—K-Mart, Wal-Mart, that kind of thing—traditional computer stores. We really went out and talked to them about "What kind of products would you like? What kind of price points? What kind of images? What level of quality do you want to see?"

Some of these stores will tell you, "I need software that sells for under twenty bucks. I almost don't care what it is, but it has to be under twenty bucks." Other people will say to you, "I need to win on image count. If I'm going to bring this thing in, I need to have more images than anybody else." Someone else will tell you, "I need the highest-quality material."

What we did was design the whole strategy on the products, slicing and dicing to make sure we had an offering for every place in the channel. And that's been tremendously successful.

We have a thing called the SSQ, the sales store quotient, which is how many units times how many stores in the chain times how many chains—we add up how many units are on the shelf. If they stock three of one thing, we don't count that as a three, it's a one—it's a measure of how much exposure we have. We went from five thousand at the end of '92 to forty-three thousand at the end of '93.

First of all, Royal had to go buy the art, so we had things to work with. Then John had to make it into products that met all these different channels' needs, and then Diane [VP of OEM and direct sales Diane Kreyenhagen] and Andrew [President and COO Andrew Preston] went out and sold the channel on it.

We have a five-member executive staff team here. Royal and I both think one of the smartest things he and I realized was that each of us had particular talents, and they weren't all-encompassing, and maybe we should set ourselves up to succeed by bringing in some really smart people to help us. One of the reasons you hit a plateau and keep going is if the management team doesn't change or grow, you're not going to change how you do stuff. So we brought in three really smart people, and that's really helped out.

It's been a very stable team—Andrew's been here almost five years, Diane's been here six and a half or seven, and John's been here two and a half.

RF: They've been here so many years that we have to have those little T/Maker service award pins.

We did go after the retail chains, and in hindsight it seemed like that was a very smart thing for us to do. Sitting back in 1992 or even a little bit before, nobody knew the superstores were going to be as big as they were; nobody really knew what to do about the consumer market for personal computers and software—everyone was still trying to figure out, "What's the magic formula to crack this market?"

So when we went down this path, it was a very, very risky thing. If anything, I think, that emphasizes Andrew's and Diane's and John's contribution to the whole thing, because it was a really big gamble for us to do—I don't want to say we were betting the company...

HR: Yes we were.

If you think about where we were a little over a year ago, the word processor market had fallen away for us, we couldn't really compete there. We were in the process of selling the word processor.

A year ago we'd just completed the transaction. We'd raised some additional money, because we spent a fortune on ClickArt development and revamping, on the anticipation that we were going to raise venture capital in, like, October of '92. Whereas it turned out, while we still owned the word processor, the VCs didn't want to fund us, because they'd say, "You're a word processing company. I'd be crazy!"

It's ironic to think that by selling the word processor off, we raised money at a better valuation. It's incredible how that works.

RF: One of the things we found is we really had a split focus, and with

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HR: The investors realized that while the focus was split, you weren't going to be an innovator in the secondary product line. So even when we were putting that as our first product line, people didn't believe our story. They'd walk in and we'd still sort of have WriteNow written all over us.

We had an incredible year last year. We did pretty much run out of all our cash...

RF: Last year at this time you might have seen some grim reaper figures walking by...

HR: We laid off 30% of the employees.

RF: Half of that came from the WriteNow transfer.

HR: But then what happened is we went from being an $8 million company to being a $4 million company, like that. So you can't keep around as many admin people, as many support—you have to just say, "We're going to have to rebuild. And we're going to have to see if the revenues support it on the strength of the products that we've built."

We did not want to cut our product development, we didn't want to cut our budget for packaging and inventory, because that was what was going to make us successful.

RF: Our VCs said, well, you've got to come to the table here. You've got to make a profit.

HR: The happy ending to the story is, luckily, everything we put in place worked.

RF: Knocking on wood...

HR: March is coming in good, February came in good. We watch the numbers every month, because one of the things we learned as managers is that it's really a lot easier to run a profitable company than an unprofitable company. The decisions you make are a lot more pleasant.

RF: It was a nice slow ramp-up, and then it was fun, because all of a sudden there was a whole bunch of morale associated with it; everyone was profit-oriented. We had a little profit, then a little bigger profit, a little bigger profit, three or four months' profitability in a row, and all of a sudden success started building on success. A lot of the investment that we had made while we were unprofitable—a lot of that stuff started kicking in.

Then we started saying, "Well, wait a minute, maybe we're only clogging the channel," because in the consumer market you have to watch out for returns. So we started paying more attention, and we were surprised that all of a sudden, we really were selling through.

HR: We have a strong focus on profitability. Even though we could go out and raise money at a substantially higher valuation now, we don't do it because we really believe we can fuel our growth internally.

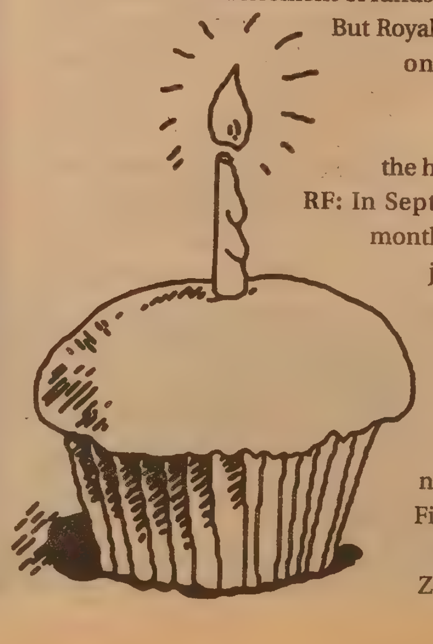
Having said that, we may come upon something where we need a large increment of funds and we may choose to go out and raise it. But Royal and I between us still own over 50%, and one of the reasons is we've been careful about the money we've raised. We've raised about $2 million in the history of the company.

RF: In September we had our first million-dollar month that was a non-upgrade situation. It was just doing business as usual. So we were all excited about that.

HR: And then we had another one!

And now we're getting to the size where what we have to think about as we go forward is "What do you do now?"

First of all, we want to make sure we continue to lead in the ClickArt area, then ZoomBooks, which is a whole different



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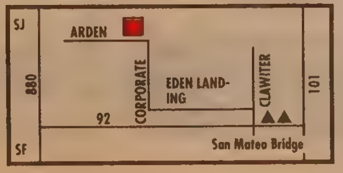

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area to talk about, and then the third thing we're doing to try and secure our future is some new venture-type activities.

I'll bring ZoomBooks into the picture before we talk about joint ventures, because in a way we built products and expertise in the company, and then we said, "How can we joint venture out there to make these more successful?"

Maybe it's because we're getting older, or because we started having kids, or I don't know what, or just because multimedia was exciting and a lot of us were personally interested in it.

RF: We were looking for anything with a little more polish than word processors.

HR: Right, we wanted to sell these people with sizzle. Image content—while we felt it had a lot of sizzle, a lot of people didn't think so. So we thought, "What can we get into that we really know something about?"

And we decided that we knew something about multimedia, because after all, we already know about the consumer price points, we know about the channels, we know about the machines they're running on, and we certainly know about the image content component.

RF: And we have a sense of what good interface is all about.

HR: Also, as many of us were becoming parents, we had a reasonably good sense about what parents want to buy for their kids.

When you spend all your time at Toys R Us, you start thinking—

HR: "Hey, I could make that!"

Luckily also serendipity occurred, and Bill Rollinson, who had been an associate of ours many years past, started a company to make multimedia children's software. He went out looking for funding and came to Royal as a friend to look over his business plan. To make a long story short, we liked it so much we bought the company.

Believe me, last year that was an area that was difficult to invest money in, because when you're looking at your core business and thinking, "How am I going to make ends meet?..." As I said, the one thing we didn't want to do was cut development on any new technology. There was a time where it was pretty tough to keep it going, because it's very expensive to develop multimedia titles.

RF: We looked at it as pretty strategically aligned with where we were heading under the multimedia or content umbrella.

Content comes in many forms—there's static art, there's moving art, animation, there's sounds, there's actual information content. You start combining all those things, then you create something that could be called a movie. Or maybe called an animated storybook.

We said, "This is our playground. This is where we're going to have to be. Acquiring this type of company is going to give us a lot of expertise at combining all the different elements that we already have in the company, and kicking out something that's synergistically greater."

HR: When we bought it, it was just a seed startup with a little bit of development and two employees. Now that group has twelve, fourteen people; they've got three projects going on for future titles.

Stradiwackius will be released around April 20, and then we're working on our own second project, and then we have a joint venture with somebody.

Where do you see CD-ROMs going? Four-Footed Friends shipped in a floppy and a CD-ROM version, but the CD-ROM version had a lot more on it.

HR: I think we should never have shipped a floppy product. Royal and I differ on this, but I think we should have gone right to CD because the CD is so much more robust and has so much more to it. It's so live.

At the time it was a tough call, though—the drives weren't being bundled and it was a big question whether they'd catch on.

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HR: And we wanted to provide the experience to people who didn't have CD-ROMs.

RF: We had some pretty robust discussions in the company in 1993, because even though CDs were the greatest-hyped thing in the entire world, if you actually looked at a lot of the sale numbers for CDs, they were very small.

HR: There were two big groups of people who hurt us in the process of shipping a floppy title. One was the press, because press wasn't interested in floppy titles. Most people said, "If it isn't CD-ROM I don't even want to look at it," because that's the new way. The second was the retailers—they were trying to build something and they really preferred CD-ROM. To make a long story short, we're doing CD-ROM only now.

RF: We were also doing that in the reality of the marketplace. The bottom line is, last year was a reasonable year for CD-ROM; this Christmas will be a pretty good year for CD-ROM, and then next year if a machine comes without CD-ROM it'll be like coming without a hard drive.

HR: The other reason is the nature of the type of work we decided we wanted to do. It was intellectually appealing to us, in that we felt we would buy it for our own children, it's just the stuff's too big to go on floppies. The truth is, in order to get that kind of richness, we couldn't fit it on a floppy any more, so given our strategy for those titles, we couldn't do it.

I think the big mistake people make who make software for kids is that they always think that kids have a lower bar of acceptability because they're kids. The truth is they have a higher bar, because they're trained on things like Learning Channel, Nickelodeon, Sesame Street, Disney video. They have a sense of what quality sound and video and animation ought to look like, and that's one reason why this stuff's so expensive to create, is because you've got to meet the kids' expectations. They're willing to wait a little for the computer to come around and bring them the material, but when it finally shows up, it better be good. That's definitely one of the things we've been learning.

I think one of things you'll see in the difference between our first title and Stradiwackius is that we're trying to incorporate more randomness and richness into the learning experience, so the games aren't just one game every time, but every time you bring it up it's randomizing from a bunch of different choices, so it comes up with a different thing so you can play the game an infinite number of times and always have a new experience.

RF: Our success with ClickArt was based on having a series of products, and one of the reasons our development is working so hot and heavy is we really want to have a whole series of ZoomBooks out there. So when you look at it in the retail shelf, it's not just one thing sitting up there all by its lonesome.

It's Little Golden Books for the digital age.

HR: Exactly.

We're working with a major television network to create titles based on their content. We're really excited about that, because they came to us after seeing the quality of our first title, the CD-ROM Four-Footed Friends.

The interesting nature of the deal is that they're publishing the software and paying us a royalty. It's a unique situation, because we're a publisher but we're also a developer. The reason we did that deal is it brings us a lot of credibility, working with a player like that, and they will help us get down the learning curve of building more titles. If you're internally funding and paying royalties to someone else, it's a lot of money to run these projects. But if someone else is coming to you and they basically cover the project...

RF: This follows up on creating new channels, as well. From a marketing point of view, it makes a lot of sense. They've got five or six hours of uninterrupted programming for kids every morning. We don't really compete with anyone there—again, we may sell against Brøderbund in the retail channel, but on the TV channel, we're kind of there by our lonesome with our strategic partner.

HR: And we want to see how they do. It's an interesting experiment for us, it's very profitable, we get a royalty on the deal, we're recognized as the author on the packaging, so we have exposure, but it's not our title. It's a backwards relationship from what you think we would do as a company.

RF: They're just great to work with. It's nice when you put a lot of effort into something—like our little characters' mouth movements, so it actually looks like they're mouthing the words—that took a lot of time. Even though 80% of the people may not overtly notice it, *they* noticed that kind of stuff. It's really nice to work with a partner who appreciates that type of thing.

One of the technical things we're trying to create is a standard children's interface. About 30–40% of any ZoomBook title is transferable between titles.

HR: Because it's underlying code, it's the interface. It's the basics of the program. That's one of the things we're trying to do, refine how that works, so that as we create new titles, we're making it easier and easier for kids to use better and better, faster and faster...

RF: The first title took X to get out, the second title is only going to take 60%X, and as we refine it more it'll take shorter and shorter periods of time to get titles out the door. And from a technical point of view, that's very important to us, because we don't see anybody else really trying to come up with almost an application framework for storybooks and then plug into that. If you look at a lot of stuff that Brøderbund does, and other people, they're almost reinventing the wheel with each title.

HR: We're trying to integrate our approach so we're building on something. You might think we put the deals together at random, and sometimes we feel like we do, but the truth is the big reason we wanted this particular alliance is not just because it was funding a development project, but who they are and what they represent in terms of marketing opportunities down the road.

The same thing we've done when we licensed *The Great Escape of Marvin the Ape* from Penguin, which is a top-selling Penguin title. Again, the idea was to work with a book publisher. We're writing the software, we are the publisher, we pay them the royalty, but the idea being that they are interested in comarketing through their channels.

The whole idea is that we can experiment in different channels and see, without blowing any big money on it, because we're interested in profits, to figure out how this whole children's market is going to evolve.

That's one of the ways we think a small company can succeed in the industry—if you have some partnerships with some big players, and not necessarily in the software business. We're in an industry that's always looked internally for our alliances, we all ally with each other. The truth is, there are a lot of companies outside the industry, and we have a number of successful joint ventures that are helping us to fund our growth and providing stability for the future. Companies outside the industry, where we're bringing software expertise to them.

We feel like we're covering a lot more bases now.

RF: That in itself is a brand new channel. Whereas our main channel was consumer-oriented retail back in 1992–93, what we're looking at in '94–'95 is obviously a continuation of direct mail and consumer channels, but it's how we plug in to somebody who may themselves have an installed base of twenty million people that we can sell into. When we plug into that type of strategic partner, we're not competing with Brøderbund, we're not competing with Microsoft, it's us and them as a strategic partnership selling to their gazillion installed base. ■

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cc:MAIL DOS Platform V4.0	214
OS/2, Windows or MacIntosh Platform	359
Unix Platform	834
10 User license/25 User/100 User	250/612/2,387
Group Pack 10-pack DOS/WIN	656
Mobile/Remote	151/210
Remote Import/Export	95
Router	942
Link to SMTP v2.0/Link to UUCP v2.0	2,592/384
MICROSOFT PC Mail v3.0 Server + 10 Users	677
PC Mail 5/20/100 Users	273/930/3,633
MHS Gateway/PROFS	708/3,405
SMTP/X400 Gateway	3,405/3,405
FAX Gateway	1,419

Network Utilities

BRIGHTWORKS Utilities for NetWare	359
Fusion Software 100-User	1,164
Automatic Inventory 100-User/250 User	534/763
CENTRAL POINT Anti-Virus for NetWare	889
Xtree Tools for Networks/Server Extension	565/442
Xtree Xtnet for NetWare	387
CHANTAL RAID (Software Only)	640
CHEYENNE InocuLAN (20/250 workstations)	326/655
Utils for NetWare 286/386	257
COREL Network (RAID/CDROM/OPTICAL sw)	420
DIRECT ACCESS Network Menu	425
FUNK App Meter	464
FRYE Early Warning System or Lan Directory	339
INTEGRA Oasas RAID (Software Only)	535
INTEL LanDesk Virus Protect (Single)	696
LanDesk Virus Protect 4-pk/20-pk	2,070/6,757
LOTUS Notes NLM	Call
MCAFEE NetShield	655
MICROTEST Lan Assist/Map Assist	265/360
SYMANTEC Norton Admin. 5/10 Users	247/438
Norton Admin. 25/50/100 Users	1,068/2,028/3,680

Peer-to-Peer Networking

ARTISOFT LANtastic 6.0 Network Starter Kit	375
LANtastic 6.0 Add-On Kit Coax/10BT	170
LANtastic 6.0 Software Single/5-User	99/354
LANtastic 6.0 Software 10/25 Users	637/1,272
LANtastic 6.0 Software 50/100 Users	2,118/3,460
Noderunner/SI Coax or TP	124
Noderunner/SI Combo	154
Noderunner/SI Coax/TP (5 pack)	423/440
Lantastic for MAC	589
Lantastic for TCP/IP Single/5 Pk	220/883
MICROSOFT Windows for Workgroup V3.11	159
WFW V3.11 Add-On for Windows 3.1	69
WFW Starter Kit (Software/Hardware for 2)	399

RAID 5 SERVER SUB-SYSTEMS

Subsystems include one 4mm DAT tape drive w/Server NLM, 1 networkable CDROM drive w/ Server NLM, & RAID-5 storage from 2 GB w/ RAID 5 NLM, monted in individual ext. chassis. Add a SCSI adapter to complete configuration.

Adaptec 1540ISA/2740EISA/1640MCA	285/399/333
2 GB, 3 1GB drives, 10ms	5,461
3 GB, 4 1GB drives, 10ms	6,530
4 GB, 3 2GB drives, 12ms	8,424
5 GB, 6 1GB (2 host adapters needed)	7,599
6 GB, 4 2 GB drives 12ms	10,480

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3C509 TP Etherlink III as low as	$83
Ethernet SuperBundle	$1,080
Token Ring SuperBundle	$4,100

FastLink/ 3Com

Networking Super Bundle

All bundles include 3Com's Ethernet Super Bundle as described above, five 10 BaseT cables & corresponding networking software. 10 User bundles include 10 cables and 10 lan cards.

Novell Personal NetWare 5 Users	$1,421
Lantastic 6.0 5 Users	$1,484
Lantastic 6.0 10 Users	$2,217
Novell NetWare 3.12 5 Users	$1,748
Novell NetWare 3.12 10 Users	$2,924

NETWORTH CONCENTRATORS

NetWorth

NetWorth's Tri-Segment Hubs provide high performance, low cost connectivity for NetWare LANs. Through its distributed segment architecture, each hub can be separated into three 8-port groups, with each group assigned to a separate segment.

Tri-Segment Stackable 24-port w/Mgmt	$1,999
Tri-Segment Stackable 24-port w/o Mgmt	$1,299

Networth's Series 4000 hub features built-in multiple backplane capability for Ethernet, Token Ring, and FDDI connectivity and can support up to five separate 10Mpbs segments. NetWorth's NetWare Application Engine (NAE) utilizes Novell 's NetWare Runtime as its native operating system and allows any NLM-based application to be run from within a Series 4000 hub.

3/6/10 Slot Chassis	$642/836/1,933
Tri-Segment 24-port Modules w/Mgmt	$2,191
Tri-Segment 24-port Modules w/o Mgmt	$1,546
Tri-Segment Management Module	$899
Token Ring Module	$1,159
NAE w/NetWare Runtime	$3,783
NAE w/o NetWare Runtime	$3,026

digital

Digital's EtherWORKS 3 TURBO family of ethernet cards is the new price/performance leader designed for real world networks. With parallel processing and shared memory architecture, and on-board dynamic buffer management of 128KB to handle traffic bursts, the EtherWORKS 3 TURBO family continues to deliver great performance as your network grows.

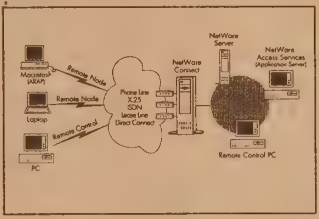
For a limited time, buy 4 EtherWORKS 3 adapters and get one FREE!

DE203-AB Turbo 10BaseT w/128KB	$127

NOVELL NETWARE CONNECT

Building A Flexible Communications Server With Novell NetWare Connect

Novell NetWare Connect is a software based communi-cations solution for NetWare LANs. It allows inbound/outbound modem communications including remote login and remote control. Using NetWare Connect, users on a network can dial out to services such as Compuserve, BBSs, & Internet providers. Remote users can dial in from field offices or their homes and get full access to all NetWare services. With the addition of FaxServe from Cheyenne Software, NetWare Connect can also be used for inbound and outbound fax services. Available in 2-64 port configurations. For future expansion, this platform also supports the addition of Novell MultiProtocol Router.



Ports	w/FaxServe	w/o FaxServe
2	$1,370	$987
8	$4,621	$3,811
32	$7,306	$6,496

HEWLETT PACKARD CHEYENNE EXABYTE

Buy a Hewlett Packard JetStore 5000 4mm DAT tape drive with the award-winning Cheyenne Arcserve NLM for Windows software and receive a FREE 4mm Cleaning Kit and a DAT tape! HP is the worldwide leader in DAT market with over 46% of the market. DAT technology provides high performace combined with high reliability to give you the optimum backup medium. With DDS2 compression, you can backup up to 16 MB on a single DAT tape.

Another winning combination is the Exabyte 8mm tape drive and Cheyenne Arcserve NLM for Windows. The EXB-8505 8mm tape drive offers 5GB of native capacity, and up to 10 GB of storage using hardware data compression.

For NetWare 3.1X or 4.X:

	4-8 GB DDS	8-16 GB DDS2	5-10GB
5 Users	$1,579	2,072	2,864
10 Users	$1,822	2,314	3,107
25 Users	$2,238	2,731	3,523
50 Users	$2,369	2,862	3,654
100 Users	$2,477	2,970	3,762
250 Users	$2,897	3,390	4,182

SPECIAL OFFERS!

Purchase a HP Jetstore 5000 and get a 4mm cleaning kit and a DAT tape FREE!

Purchase an EXB-8505 8mm tape drive and get 10 tapes FREE! (Offer good thru 6/1/94)

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OR

Buy three SMC Elite Ultra 6-packs, get one 6-pack FREE! Buy one SMC Elite Ultra 24-pack, get one 6-pack FREE!

SMC Elite Ultra 6-pack Coax or TP	$632
SMC Elite Ultra 24-pack Coax or TP	$2,371
SMC Elite Ultra Combo 6-pack	$751
SMC Elite Ultra Combo 24-pack	$2,845

Offer good thru June 30, 1994, Offers cannot be combined.

NOVELL.

NetWare 3.12

5 Users	$618
10 Users	$1,344
25 Users	$2,113
50 Users	$2,857
100 Users	$4,000
250 Users	$7,147

NetWare 4.01

5 Users	$798
10 Users	$1,827
25 Users	$2,685
50 Users	$3,600
100/250 Users	$5,030/8,977

Personal NetWare

Personal NetWare Single/5-Users	$89/290
Novell DOS 7	$89

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Buy 5 National InfoMover Ethernet cards, get 2 cards FREE!

InfoMover 2000 Coax/10BaseT	$92/83
InfoMover 2000 Combo	$106

Offer ends June 30, 1994

PCMCIA LAN ADAPTERS

Connect your portable computer to an Ethernet or Token Ring LAN via the PCMCIA slot. These leading manufacturers offer the accessibility you need to link up to your network.

3COM 3C589 Etherlink III 10BT	$262
3COM 3C589 Combo 10BT/Coax	$315
IBM 10BaseT or Coax Adapter	$199
IBM Token Ring Adapter	$470
National Semi Ethernet Adapter	$189
Xircom Ethernet Adapter	$290
Xircom Ethernet PCMCIA + 14.4 Modem	$590
Xircom Token Ring Adapter	$580

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Learning To Read

Brøderbund's Living Books Can Read Themselves To You Or Turn Into An Interactive Learning Experience For Kids Of All Ages

BY PETER JOHN HARRISON

RESOURCES:

Brøderbund Software, Inc.
1-800-521-6263

"Daddy, I want to play with the book."

I hear a lot of that from my 4-1/2-year-old son lately. William likes to sit down with a book and enjoy himself. Not just any book though, he wants to play with one of Brøderbund's Living Books.

A Living Book is nothing like those dry picture books you remember from grade school. It's an interactive learning experience that ties the spoken and written word together with animation that draws nonreaders and readers alike into the story. Take Aesop's tale of "The Tortoise and the Hare," a story I learned when I was William's age.

As the narrator for Brøderbund's The Tortoise and the Hare explains that "the Tortoise was a friendly fellow who moved at his own slow pace," the words on the page light up, helping my budding young reader learn what letters go with what words. Once the sentence has been read, Aesop's famous old Tortoise comes ambling out of his home with a yawn and a stretch, says hello, and sits down on a bench. The whole story unfolds like that, as if it was a movie with subtitles in the same language and you get to pick the language, English or Spanish, even Japanese with some titles.

A Living Book isn't just another way to read to your kid, though. There are two ways to use a Living Book. You can ask the book to read itself by selecting the "READ TO ME" button with your mouse, or you can turn it into an interactive learning experience, by selecting the option "LET ME PLAY."

When you select LET ME PLAY, the pages of the book are read one at a time, pausing to let the reader "play" with the characters, words, and "inanimate" objects on the page. For example, following the reading of page one of The Tortoise and the Hare, where the two main characters are introduced, the reader can click on the Tortoise, who looks out at the reader, smiles, and says, "Don't you just love mornings?," only to have the Hare stick his head out his front door to reply, "No, they're too slow!"

Each page has things do something when the reader points and clicks on them. The mailbox yawns. The Rabbit comes out and reads the newspaper when you click on it. The birds jump and chirp. There's also an icon on each page for when you want to reread the page, or you can click on individual words, and just that word is read.

Brøderbund's Living Books redefine the term "Intuitive Interface." Once the book has been started, one of the characters comes up on the screen to explain which button to press to have the book read to you, and which button to press if you want to play in the book. You don't have to know how to read to learn how to read, though it's a little confusing to beginning readers when they push one of the buttons for Spanish or Japanese.

Currently Brøderbund has four titles in its Living Books series. For kids of all ages, reading or not, there's Aesop's The Tortoise and the Hare, and Mercer Mayer's Just Grandma and Me, a story about "Little Critter's" trip to the beach with Grandma. For older kids, who are ready for longer stories and more vocabulary, there's Marc Brown's Arthur's Teacher Trouble, a story about going to grade school and preparing for a spelling bee. Brøderbund's fourth title, The New Kid on the Block, is a collection of wonderful little poems by Jack Prelutsky, and is intended for older children who are ready to read on their own, though it's fun for children of all ages.

A Living Book is nothing like those dry picture books you remember from grade school.

Brøderbund's Living Books are available for both Macintosh and Windows systems. For the Mac, you need System 6.0.7 or higher, a 256-color display, 4MB of RAM, and a CD-ROM drive; for the PC you need Windows 3.x, a 256-color display, 4MB of RAM, a CD-ROM drive, and a Sound Blaster or Sound Blaster-compatible card. Brøderbund also says a 386SX Windows system should have enough power to run their software, but I found that on a 386SX/25 system, the animation lagged behind the audio for many of the Living Book sequences. I suggest using at least a 386DX/33 to keep the animation and audio in sync.

Brøderbund's Living Books will never replace my sitting down with William and reading him a bedtime story, but they are a good way to get him interested in reading. Living Books make reading fun for him, and that's what I want him to learn, that books and reading can be fun. ■

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Peter Harrison, a San Mateo-based data communications and connectivity specialist, can be reached via USENET (peterh@well.sf.ca.us) or CompuServe (74017,1716).

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Compaq Concerto 486-33 4/250	2339
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TM 4000E WIN DX2-50 Mono 4/200	2405
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* 486DLC-40 w/128K	$148
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* VLB 486DX-50 w/128K	$498
* VLB 486DX2-66 w/128K	$548
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ISA 486DLC-40	$962
EISA-VESA 486DX-33	$1,218
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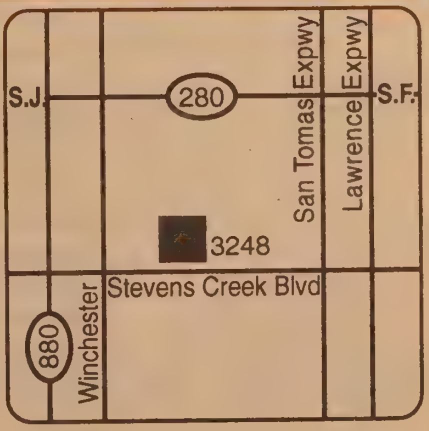

A Tale Of Two WordPerfects (And A Word)

BY LENNY BAILES

RESOURCES:

WordPerfect 6.0b for DOS, $495 (upgrade from WP 5.1 for DOS, $129, tradeup from other products, $149)
Requirements: 286 PC, DOS 3.0 or higher, min 7MB HD space

WordPerfect 6 for Windows, $495 (upgrade from WP 5.1 for DOS, $129; trade-up from other products, $149)
Requirements: 386 PC, 6MB RAM, 32MB free HD space, VGA monitor, mouse, Windows 3.1

WordPerfect 5.1 Classic for DOS, (upgrade for registered 5.1 users, $49)

Word for Windows v6, $495 (Upgrade from Word 2, $129; trade-up, $129)
Requirements: 286 PC, 4MB RAM, min 18MB free HD space, EGA monitor, mouse, Windows 3.1

Microsoft Corporation
1 Microsoft Way
Redmond, WA 98052
(206)882-8080

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For years, WordPerfect has had the largest part of the market share in PC word processing. Factors in its success included the recently curtailed free telephone support system, definitive support of a wide range of DOS printing devices, and the tireless work put into its maintenance releases.

As PC computing has entered the arena of giant corporate competition, the rules of the game have changed, and WordPerfect is being forced to adapt to these changes. Pressured by the success of Windows, and of Microsoft's Windows word processor, WordPerfect has put two years into building a "bridge" between its DOS products and the graphic-based, mouse-oriented Windows environment.

It now finds itself placed between a rock and a hard place. After four years as a mainstay in the business world, v5.1 of WordPerfect for DOS gave way early last year to v6. Somewhat later, v6 of WordPerfect for Windows appeared.

WordPerfect 5.1 for DOS was the most popular, efficient, and full-featured word processor in the PC world for a long time. The first DOS word processor to incorporate sophisticated graphics handling and font management, WordPerfect's something-for-everyone design philosophy is now slowly being overshadowed by the elegance and efficiency of Microsoft's Mac-inspired Word for Windows. With Windows 3.1 tamed and harnessed as a stable work environment, Microsoft has made a sizeable dent in WordPerfect's market share.

WordPerfect's answer to the challenge has been to do what it knows best—write new code that throws in the kitchen sink. Its new DOS and Windows word processors can do everything but slice bread.

WORDPERFECT 6—DOS

WordPerfect 6 for DOS is an amazing program: the last gasp of the PC-DOS insurgents. It provides a super-powerful file management system, and gives users the choice between a text-based and WYSIWYG work environment. The best Microsoft Word features have their equivalents here, and the program also contains a powerful spreadsheet editor. You can edit and recalculate Lotus and Excel files within a document, or build new spreadsheets with over one hundred different formulas. The traditional WordPerfect indexing, macro, and printing options have tripled in power.

The idea behind WordPerfect 6 for DOS was to build a bridge between DOS and Windows—to let users gradually adapt to working in a mouse-driven, WYSIWYG environment. Both the text and graphic modes can display a ruler line and ribbon (in emulation of Word for Windows). WordPerfect's own invention, the button bar, has been ported over from WordPerfect for Windows. Up to nine documents may be edited simultaneously in resizeable windows. Microsoft's collapsible-outline feature has been adapted from Word, and the program now includes the Grammatik grammar checker.

WordPerfect 6 is a superdreadnought of a package. It cures the font management problems of 5.1, eliminating an entire sub-industry. The Orem team has also thrown in the popular WordPerfect Office 4.0 shell. MIS types in small businesses can use Office to construct a smooth, task-switching DOS front end for their nontechnical personnel.

The only fly in the ointment is this: PC market trends suggest that many companies have exhausted their willingness to consume the DOS mindset in their productivity applications.

In the past, WordPerfect has been easy for a certain segment of the population to memorize, if somewhat arbitrary in the construction of its command set. But the function-key-driven interface that served Orem well for so many years is maxed out in WP v6. The power is there under the hood, but there's nothing intuitive about the way the new features are embedded in the command set.

The Orem programmers have done their best to let users of previous versions use their arcane knowledge, but the interface is now bursting at the seams. Sure there's a pull-down menu system, but like the function-key assignments, it is arbitrary.

The attraction of Windows is that Microsoft is standardizing the interface with universal menu options and keyboard shortcuts. The keystrokes that users memorize in Windows can apply to many applications. The Windows world frees them from the necessity to learn an isolated command set for a single program.

There are tradeoffs in productivity between the two environments. DOS is still snappier, easier to maintain, and more economical in terms of necessary hardware investment. Many law firms and small businesses are still plugging away, happily, with their clerical departments on WordPerfect 5.1. These people don't need sophisticated desktop publishing, or built-in drawing tools. They may also have substantial time and money invested in employees who know the WP 5.1 command set backward and forward.

Although a transition to the 6.0 DOS version will require some additional training time, almost 80% of the old command set can be retained by selecting a "5.1" compatible keyboard. The "Coach" feature can also assist novice users to learn the program. "Coaches" let you point at a series of task-oriented topics on a "how-to" menu, and then walk you through step-by-step, interactive tutorials.

Like DOS, itself, WordPerfect 5.1 may simply be too widely used to disappear from the PC scene for a number of years. Recognizing this fact after a temporary period of confusion, the company has announced a WordPerfect 5.1 "Classic" upgrade. This is the basic 5.1 program with added file conversion support for DOS and Windows WP 6 files, an internal fax manager, and an enhanced file manager, similar to the one in WP 6 for DOS. WordPerfect 6.0 for DOS, has undergone two maintenance upgrades. Version 6.0b, the current release, has been tweaked for speed improvement. It also includes a series of new macro commands and a revised printer installation program

Recent news from Orem is ambiguous as to the future status of WordPerfect for DOS. First the company announced that v6 would be frozen as the last release of DOS-based WordPerfect, then they reversed this announcement. Currently, WordPerfect is focusing most of its corporate energy on marketing and developing its Windows products.

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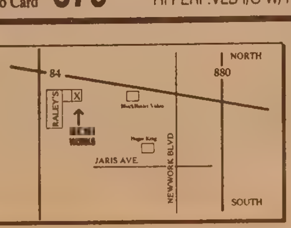

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WORDPERFECT 6 IS A SUPERDREADNOUGHT OF A PACKAGE. IT CURES THE FONT MANAGEMENT PROBLEMS OF 5.1, ELIMINATING AN ENTIRE SUB-INDUSTRY.

WP AND WORD FOR WINDOWS: THE KITCHEN SINK, AGAIN

With WordPerfect for Windows, v6, the company has gone a long way toward giving Microsoft a run for its money.

Unlike the 5.1 and 5.2 Windows versions, number 6 is a true Windows application, not a ported hybrid. It contains an integrated file manager, provides true WYSIWYG editing in multiple views, and introduces real paragraph styles. All of the features of the DOS version (except the WordPerfect Office Shell) can be found here, along with a series of Windows-specific utilities and desktop publishing frills. The package includes fifty scalable TrueType fonts, a remarkable file-indexing utility, and WP Draw, a complete image-editing and drawing application. The battle plan here is "Anything Word for Windows can do, we can do, too—plus a little extra."

The cost for this is that WordPerfect for Windows occupies 35MB of hard disk space, realistically requires at least 6MB of RAM, and runs only on 386 or better CPUs in Windows' Enhanced Mode. You'd better have a fast hard disk and some memory left over for a disk cache, too, or you'll be twiddling your thumbs whenever you select a new menu item, page ahead in the document, or reformat the text. The Orem programmers have promised a speedier maintenance upgrade that should be available by the time you read this review. (Note: I had problems with WP4W crashing during graphic operations and spell checks, until I increased the size of the Windows swapfile to over 10MB. With a large swapfile, these errors disappeared on my system. The maintenance release is supposed to address this problem.)

By upgrading to WordPerfect for Windows 6, you definitely outpower the previous version of Microsoft Word, but in general, a good many new bells and whistles have been developed in tandem by both companies. Both new versions include:

- Improved button bar/toolbars (with readable text descriptions of the preprogrammed functions)
- Floating pop-up menus attached to the right mouse button
- Multiple document templates for all occasions
- Smart formatting options that easily generate bullet lists, balance columns, and autonumber paragraphs
- Point-and-click transfer of style information between paragraphs
- Improved cross-referencing and index generation.

WordPerfect has gone all out to make its offering the champ at document management. Nothing in Word can match the way WordPerfect sorts files, remembers directory listings, appends document summaries, and performs text search-and-retrieval over multiple hard disk partitions.

WordPerfect's built-in spreadsheet module imports and edits files from Excel, Quattro Pro, or Lotus 1-2-3, and contains over one hundred built-in formula functions. It's conceivable that if you own WordPerfect, you won't need a separate spreadsheet application. By contrast, Word 6.0 is completely dependent upon Excel.

The programmers at Microsoft have done their best to make Word the most user-friendly, logically designed word processor in the industry. Word is slimmer and more elegant than WordPerfect, while lacking some of its brute computing power. In WordPerfect, the emphasis is on programmable user options, whereas Word tries to make your decisions for you.

Word's new Autoformat option can analyze your document and assign aesthetic paragraph styles to the text (kind of like a "DTP" grammar checker). The Word document screen and user interface are more cohesively organized. Evolving from the original Macintosh interface, Word is more ergonomic. You will be able to find formatting features without constantly searching through menus. The Word help system is a joy to use, and outmatches WordPerfect in context-sensitive tutorials.

Microsoft has also gone to great pains to provide WordPerfect users with an alternate interface and help modules within Word. They may continue to use the WP 5.1 command set until they're ready to make the transition to Microsoft's way of doing things.

UPGRADE CONCERNS

So who will be best served by upgrading to one of the Windows word processors, who can use WordPerfect 6 for DOS, and who might be better off staying with WordPerfect 5.1?

For individual users and businesses concerned with text-based word processing, the transition from WordPerfect 5.1 to 6.0b for DOS should not be too difficult. If you attempt to use the WYSIWYG editing modes, the 6.0 version has a sluggish response time. But in text mode, you can turn off anything that you don't understand.

Added nesting of menu options may slow down speed typists, but this can be overcome by constructing a few simple macros. Users may want to configure the new version to use the 5.1 keyboard until they get used to some of the shuffling of their standard command set.

If you seriously want to increase your word processing capability, WP 6's great spreadsheet power, superior indexing and file management, and improved font handling, may justify the expense of an upgrade.

Note that the WordPerfect Macro language has undergone a major change in the 6.0 version. An included conversion utility will convert many keystroke-based routines, but some macros may need to be completely rewritten. Learning the new macro language will take time for those who set up turnkey systems for novices.

Law offices should be aware that conversion from the 5.1 document format is less than perfect. The printer drivers in 6.0 may not deliver 100% identical placement of line breaks and page breaks. Your layouts for pleading boxes, headers, and footers may have to be redone. Complicated desktop published documents with embedded graphics and multiple columns will almost certainly have to be worked on in 6.0 to retain the same appearance. (The problems with importing 5.1/5.2 files into the Windows version of WP 6 are slightly more pronounced.)

The WYSIWYG layout features packed into this product are impressive, notwithstanding the growing obsolescence of DOS in a Windows world. You'll want a fast 386 or better if you plan to use WP 6 for DOS in graphics mode.

SUMMARY: WHICH WINDOWS PRODUCT IS THE ONE?

If you need a document management system under Windows, if you do database publishing and work with a variety of data formats, if you love building templates and systems for editing a variety of document types, then you may prefer WordPerfect to Word. WordPerfect includes a two-page editing mode for documents, more clipart, more templates, a powerful drawing program, superior file management, built-in spreadsheet capabilities, and slightly more sophisticated document indexing. You'll need powerful hardware to put WP4W through its paces at a comfortable speed. I recommend at least 8MB of RAM and a 486-33 as minimum requirements.

If you're looking for intelligent, automatic formatting procedures, an excellent help system, a user-friendly command set, and integration with the other products in Microsoft Office (Excel and PowerPoint), then Word may be your choice. (If you own a version of Excel, you can read spreadsheets directly into Word, and pop up Excel in the middle of a document to edit, reformat, or create new datafiles.) Word makes it easy to do page layout. It has one hundred levels of editorial "undo," an interactive spelling corrector, logically constructed toolbars, and a series of page "Wizards." (Like the WordPerfect Coaches, these routines walk you through the set up of a variety of document types.) ■

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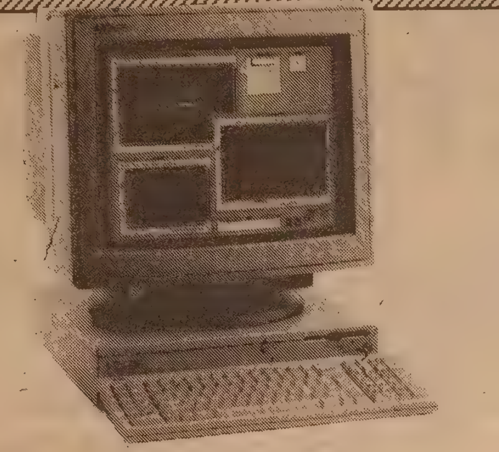

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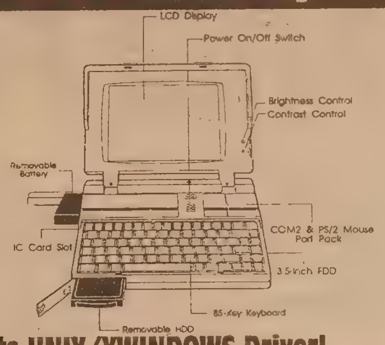

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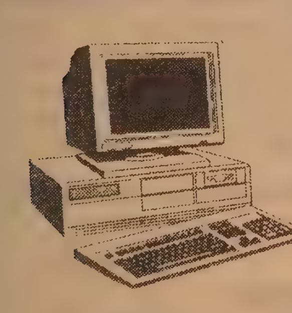

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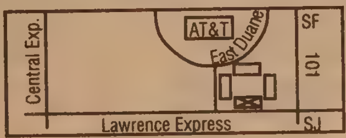

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A Multimedia Primer

What You Will Need To Consider Before You Purchase That New CD-ROM Drive

BY LENNY BAILES

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Multimedia is finally becoming more than a buzzword thrown around by computer industry pundits. The pontificators, and, of course, the clone dealers always hope that you'll spend your money on the latest and greatest. But CD-ROM drives have already proved their usefulness to researchers and businessmen, alike. Access to large documents on CD-ROM combines the storage advantages of microfiche with a set of enhanced display and retrieval options made possible by hypertext.

General reference tools like *The Oxford English Dictionary* on CD-ROM offer keyword search features not available in the paper edition. (The *OED* CD-ROM presently costs an arm and a leg, but some writers and libraries may find it worth the price.) *Grolier's Multimedia Encyclopedia* is considerably cheaper, integrating video, sound, and hypertext search capabilities with traditional word and subject indices. For the nerdier among us, WordPerfect Corporation now offers five years of *WordPerfect Magazine* and three years of *WordPerfect for Windows Magazine* on CD-ROM for $89.95. The collection features a plethora of search options to access articles, tips, and macros.

CD-ROM drives have gradually assumed a dual function. In addition to serving as data reference tools and music/video entertainment devices, they are becoming the media of choice for installing/running operating systems and productivity applications. Some companies have begun a policy of pricing the CD-ROM version of their software cheaper than the package installed from floppy disks. Other companies now provide dual-media installation in all of their products. Installing a program or suite from a CD-ROM drive is faster and more convenient than sitting through a floppy installation.

CD-ROM QUALITY ISSUES

You can now buy CD-ROM drives of varying quality at four different performance speeds, and with too many interface connection types. Older, single-speed drives are slow, and don't support the features implemented in current CD software. Single-speed drives are available, now, mostly from bargain-bin resellers at less than $100. You won't be able to use them for multiple-sessions with Kodak PhotoCDs. They're probably also too slow to properly display animated videos.

Double-speed drives are the current industry standard. A data transfer rate of 150KB/sec or more is generally required for satisfactory display of animation. A first-rate drive should deliver a transfer rate greater than 250KB/sec with an access time less than 250ms. Some older, double-speed drives lack the ability to read multiple-session PhotoCD disks. (Multiple-session means that you can return a CD-ROM disk made to the Kodak specification to your film developer with each new roll of film. You can increment stored photo sessions on the disk and see all of them on a multisession-compatible drive. Older, single-session drives will display only the first session on the disk.)

Triple- and quadruple-speed drives are out there now, in the marketplace, and will probably replace the double-speed standard within about six months to a year. At present, most CD multimedia applications are programmed, specifically, to work with double-speed drives. So the current performance improvement obtained with higher-speed drives is minimal. (The straight disk reads involved in an ASCII text search do sometimes go faster with triple- and quadruple-speed drives.) Eventually, more sophisticated multimedia software will also be reprogrammed to deliver better performance with higher-speed hardware.

The Toshiba XM3401 drive that I tested for this article is generally regarded as the fastest double-speed drive in the industry. Toshiba provides a series of benchmarks that claim the 3401 also outperforms NEC triple-speed models in many instances. The Toshiba drive has a random access rate of 195ms and a basic data transfer rate of 320KB/sec with the 8-bit SCSI adaptor card included in the kit. (A 16-bit SCSI card will make it run faster.)

The interface card used to connect the CD-ROM drive to the PC bus is another important issue. Many less expensive drives are programmed to work with proprietary 8-bit host cards. These use nonstandard drivers that may or may not conflict with other peripherals installed in your system. If you decide, later, to add SCSI devices, you'll need to purchase a separate SCSI adaptor card, and use up two slots on the motherboard. A CD-ROM drive that supports the SCSI interface may prove to be a better option. SCSI (Small Computer Serial Interface) permits you to daisy-chain a variety of devices (hard drives, CD-ROMs, scanners, etc.) to a single controller card. Or, if you own a Macintosh, you can plug the drive directly into the back panel of the computer. A SCSI-compatible CD-ROM drive allows a PC system to be expanded later. Many dealers bundle a CD-ROM drive and SCSI host adaptor together, in a bargain package. This can save you as much as $100 to $150 (the price for a good standalone SCSI adaptor card).

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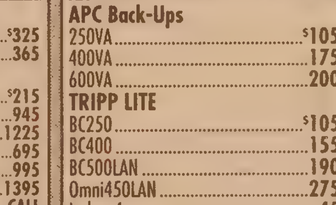

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RESOURCES:

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cards are cheaper than SCSI models, but their data transfer rates are generally slower. They also may not run all of your CD-ROM software. Some DOS and Windows multimedia applications are written to a standard called ASPI (Advanced SCSI Programming Interface). These programs won't run with proprietary CD-ROM interfaces. Update drivers for proprietary adaptor cards may also become harder to locate as SCSI wins more adherents.

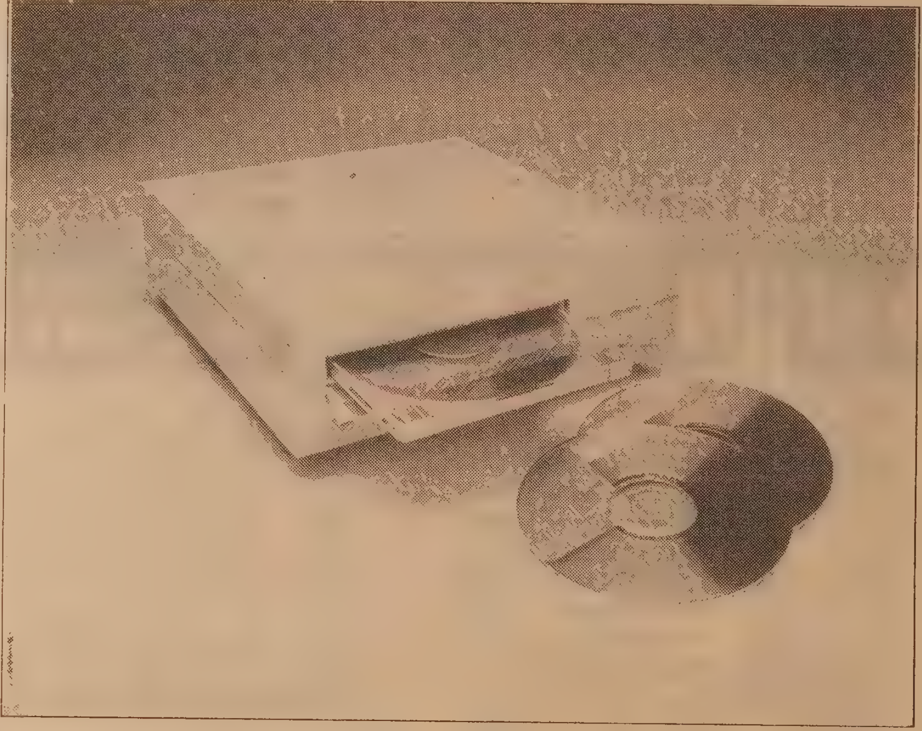
The Toshiba XM3401 is an external drive that ships from the manufacturer with an 8-bit SCSI card from Future Domain. Both card and drive are easy to install, (although the drivers supplied by Toshiba address the hardware directly, rather than conforming to the ASPI standard). One of the nicer features of the XM3401 is its ability to record digital sound samples off CD tracks without an additional sound card in the system. The sound can be routed directly through the SCSI bus and written to a hard disk. (This is called MCICDA compatibility, and many CD-ROM drives don't have it.)

It's also easy to detach the 3401 from the computer, and plug it into a stereo system as a standalone component. The drive has an external volume control and standard RCA line-out jacks. Toshiba markets the 3401 in a series of kits. There's a Macintosh kit, a PC AT kit, and a SUN workstation kit. You can also buy the 3401 as an internal drive. This makes it much easier to install with a PC sound card.

SCSI INS AND OUTS

There are currently two SCSI programming interfaces in widespread use, called SCSI and SCSI-2. (SCSI-2 provides a superset of the older SCSI interface.) For CD-ROM drives, it doesn't make much difference which interface is used, because of their inherently slow data transfer rate. For hard drives, a host adaptor programmed for SCSI-2 greatly improves performance. SCSI-2's "fast synchronous" transfer mode can increase data throughput from the 2MB/sec rate of a standard 16-bit SCSI card to as much as 10MB/sec.

Several companies market universal-SCSI driver packs that allow you to take advantage of SCSI-2's more flexible interface. Multiple devices on a single host adaptor can be managed with only one set of drivers. Future Domain bundles a SCSI Value Pack with most of its 16-bit host adaptors. (The Value Pack isn't included for the 8-bit card bundled with the Toshiba CD-ROM package.) SCSI Value Pack includes a set of generic drivers for a variety of CD-ROM drives, an ASPI manager, and a set of CD-ROM utilities for sound editing and PhotoCD viewing.



Toshiba's new TXM-3401E1 external double-speed CD-ROM disc drives feature a 2.2 times rotational speed to provide a fast 330KB/sec transfer rate and an industry first 200 msec random access time.

Corel Corporation, the authors of CorelDRAW, have a CD PowerPak that includes a series of CD-ROM drivers, CD software applications, and a free set of headphones. Corel's ASPI-aware applications provide greater flexibility in manipulating the CD-ROM drive than the Microsoft utilities included in Windows. The Corel package also includes a CD full of clip art, photographs, sounds, and music.

The PowerPak package should be especially useful for DOS users who are fighting to retain conventional memory for large DOS applications. Their CorelCDX module replaces Microsoft's standard MSCDEX program. It uses a modest 3.6K of conventional memory, compared to MSCDEX's 27K bite into your system resources. (The sidebar accompanying this column includes a tip on how to preserve conventional memory when you're stuck with Microsoft's CD-ROM extensions.)

ADDING A SOUND CARD

A CD-ROM drive, by itself, is really only one-half of a multimedia computer. A sound card is the other half. The sound card adds the capability to record and play digital samples, edit sounds, mix music, and integrate spoken material into your documents and presentations. The sound card also adds a new dimension to multimedia packages like the Grolier Encyclopedia. It allows you to play back spoken lectures, animated movies, and musical compositions that accompany hypertext media.

The Sound Blaster 16 that I tested for this column is the most widely known and compatible sound enhancer for the PC. (The Pro Audio cards from Media Vision are also popular, but don't have as many software packages written explicitly for them.) Getting the CD-ROM and the sound card in your system to cooperate can be a project in itself. Creative Labs markets a series of Sound Blaster kits that include a Panasonic double-speed CD-ROM drive and proprietary interface. The Panasonic 563 drive is almost as fast as the Toshiba 3401. And if you buy the sound card and the CD-ROM drive in one package, the odds are that they will coexist in your system without a struggle. The Sound Blaster/Panasonic combination does not use a SCSI interface. If you'd like to save a slot on the bus (run the CD-ROM drive, sound card, and a SCSI hard drive or scanner through one card), both Creative Labs and Media Vision offer sound cards with a built-in SCSI interface.

The connectors on the Sound Blaster 16 SCSI card are designed to accommodate an *internal* CD-ROM drive, only. There is no obvious way to attach an *external* CD-ROM drive like the Toshiba 3401. I didn't know this when I requested the review materials, but a technician at Creative Labs put me in

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- 8K Internal Cache
- Shadow RAM

Landmark speed: 111/90

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386DX 128K 40/33
Complete Systems

- 4MB RAM exp to 32MB
- Shadow RAM

Landmark speed: 65/55

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386SX 40/33
Complete Systems

- 4MB RAM exp. to 16MB
- Shadow RAM

Landmark speed: 42/24

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VGA 800x600, 256K	$24
Trident 512K	34
Oak 1MB	57
Trident (8900CL) 1MB	58
Tseng ET 4000	74
Oak 1MB WIN ACC (ISA)	59
Fahrenheit 1280 Win Acc (VESA)	145
Diamond Stealth 24 (VESA)	145

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Super I/O (16550) +IDE	$45
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SCSI +IDE	57
RLL Controller	39
Adaptec 1542C	175
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Sony CDU31A/33A Double Speed	$140/160
Mitsumi/Doublespeed	140/160
Panasonic 562B Double Speed	160

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101 Enhanced/IBM P/S2	$17
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386DX-16/25/33/40 (no cache, no CPU) Add $15 for 128K Add $25 for 256K	45
486DX-33/66 (no cache, no CPU)	45
386DX-40 128K	89
486SX-25/33 (CYRIX)	89/99
486SX-25/33 128K (Intel)	155/185
486DX-33 128K (Intel)	325
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486DX2-66 128K (Intel)	465
486SLC2-66 (IBM)	250

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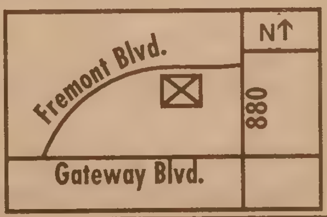

touch with a cable manufacturer. Fortunately for me, Litz Info Tech, Inc. specializes in selling internal-to-external cables and connectors that integrate an external CD-ROM drive onto a SCSI bus. Their 50-pin Centronics cables let you set up the external CD-ROM as the last peripheral in the chain, or attach more devices through the CD-ROM drive's second SCSI socket. Once I had the correct cables from Litz, the Toshiba drive plugged right into the Adaptec Host Interface mounted on the Sound Blaster 16SCSI. The Adaptec 1520 chip included on the card is a true 16-bit SCSI-2 interface. It is compatible with OS/2 as well as with DOS and Windows, although it can't be used to boot up the system. (If all of your hard drives are SCSIs, you'll need a separate card for the boot drive, or else you'll need to boot from a floppy and load a device driver to start the system.)

A CD-ROM DRIVE, by itself, is really only one-half of a multimedia computer. A sound card is the other half.

SOUND BASICS

The Sound Blaster 16 handles four basic types of input. It can process dedicated CD tracks, play digitized sounds (stored on the hard disk in various formats), accept input through a MIDI port/play back recorded MIDI files, and it can also record/play input from a microphone or analog tape deck. Music directly embedded in CD-ROM media or generated from electronic MIDI files produces the best sound quality. Digitized sound files on the hard disk vary in quality with the recording method. 16-bit sounds recorded with a high sampling frequency sound better than 8-bit sounds recorded with a low sampling frequency. The higher the quality chosen for the recording, the more disk space the sound files consume—from 10MB per minute at the top down to 200/250K per minute on the low end. (Sampling sounds at the 44KHz recording rate requires a high-end 386 processor or better.) Creative Labs sells a compression chip for the Sound Blaster as an add-on enhancement. The Advanced Signal Processor chip compresses digital sound files by 400%, making it more practical to perform live sound mixing on the hard disk.

There are currently four Creative Labs sound card products:

- Sound Blaster 2.0—an 8-bit card that records mono only and will fit into an 8-bit slot on the bus.
- Sound Blaster Pro—an 8-bit card that records in stereo, but requires a 16-bit bus slot.
- Sound Blaster 16—a 16-bit card that records either 8-bit or 16-bit stereo/mono

Continued on page 278

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Multimedia System ＣＤを見よう！

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Business Class 竹 **$2,088.00**

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Network System English/Japanese

Up to 6 people : Pear to pear, BNC/10-base

SERVER: 1 set per network

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Work Station: n sets per network

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CPU	486DX33 $265 486DX2-66 $440	FDD	Mitsumi 1.44 :$33 TEAC 1.44/1.2:$78
Motherboard	VESA 256K $125	HDD	340MB IDE :$265 540MB IDE :$420
Video Card	Cirrus 5428 VLB w/1MB :$95 Diamond Stealth w/1MB :$142		
Mouse	Logitsc OEM Serial 2 Btn :$25		
Keyboard	Maxi Switch 101: $35, Japanese 8020 :$99		
CD-Drive	Toshiba Double Speed 200ms :$335 NEC OEM Triple speed 180ms :$499		
Monitor	MGC 15" .28 VESA :$335		

BASIC SYSTEM

i486DX-33MHz System	i486DX2-66MHz System
intel CPU DX-33, 486/256K, Mother Board,1MB RAM, Super I/O: 2S,1P,1G, IDE 3.5"FDD,Logitech Mouse, Mitsumi Keyboard, Mini Tower w/PS	intel CPU DX2-66, 486/256K, Mother Board,1MB RAM, Super I/O: 2S,1P,1G, IDE 3.5" FDD, Logitech Mouse, Mitsumi Keyboard, Mini Tower w/PS
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PENTIUM P5-60/256K CACHE VLB	$849	$1047	$1207	$1607	$1707	$1307
486DX2-66/256K CACHE VLB	399	567	927	1077	1167	1207
486DX-50/256K CACHE VLB	407	557	927	1077	1167	1207
486DX2-50/256K CACHE VLB	327	487	847	997	1087	1137
486DX-40/256K CACHE VLB	299	457	817	967	1057	1107
486DX-33/256K CACHE VLB	325	467	827	977	1057	1107
486SX-33/256K CACHE VLB	179	337	699	847	937	987
486SLC2-66/64K CACHE VLB	245	399	757	907	997	1047
486SLC2-66 ISA	187	347	707	857	947	997
486DLC-40/128K CACHE ISA	139	297	657	807	897	947
486DLC-33/128K CACHE ISA	125	287	647	727	897	937
386DX-40/128K CACHE ISA	85	247	607	757	847	897
386SX-40 ISA	65	227	587	737	827	877

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Multimedia Audobons Birds/Mammals	14
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National Geographic Mammals	18
Playing With Language English/Spanish	19
National Parks	15
GAMES	
Arthur's Teacher Trouble	$19
Beauty & The Beast/Sleeping Beauty	14
The 7th Guest	25
Return To Zork	17
Carmen San Diego	17
Kings Quest V	14
Stellar 7	15
Strike Eagle F15	19
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14" SVGA 1024 .28 Int	205
14" SVGA 1024 .28 NI	225
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CTX:	
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Diamond Viper 2 MB	349
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144/144 Fas Modem Int) Rockwell	83
144/144 Fax/Modem (Int) AT&T	93
144/144 Fax/Modem (Ext)	129
U.S. Robotics 14400 Fax/Modem	139
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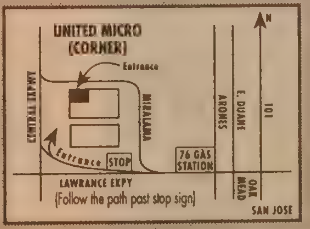

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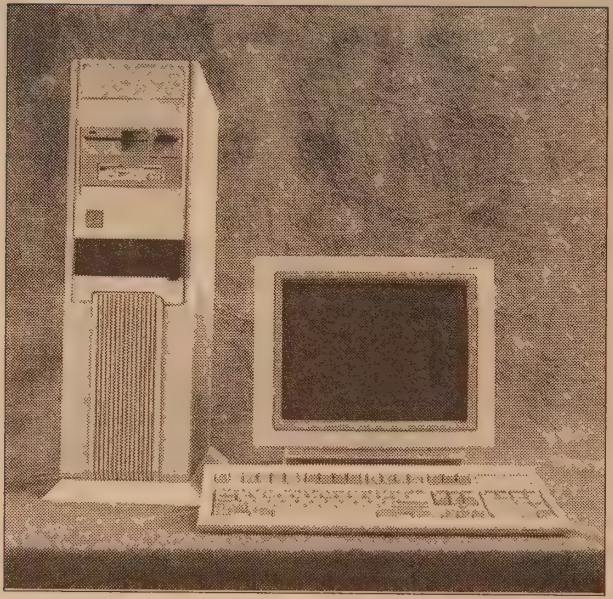

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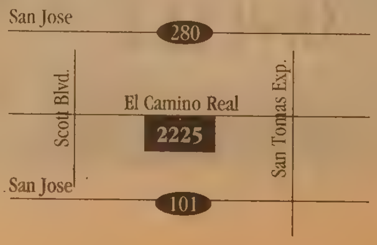

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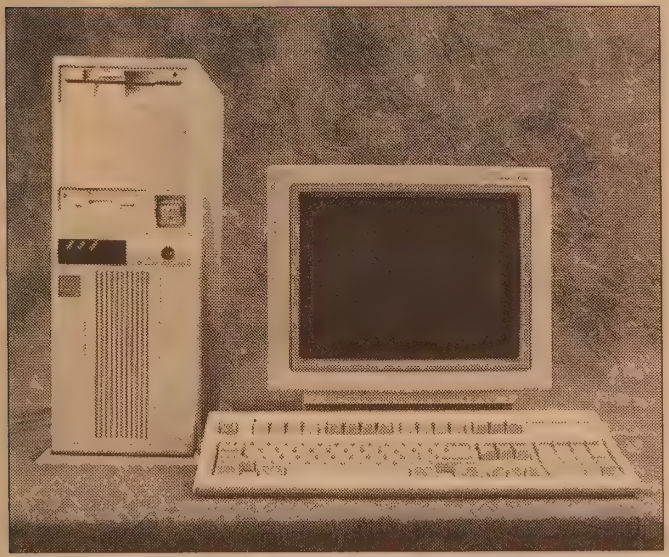

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TRIDENT		
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- Intel DX2-66MHz processor
- 256K Cache memory
- 3 32-bit VLB expansion slots
- Dual floppy drive
- VLB IDE HD/FD controller
- 2 serial, 1 parallel & 1 game port
- Supports up to 32MB RAM
- Mid Tower w/ 230W power supply
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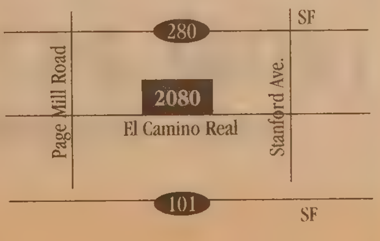

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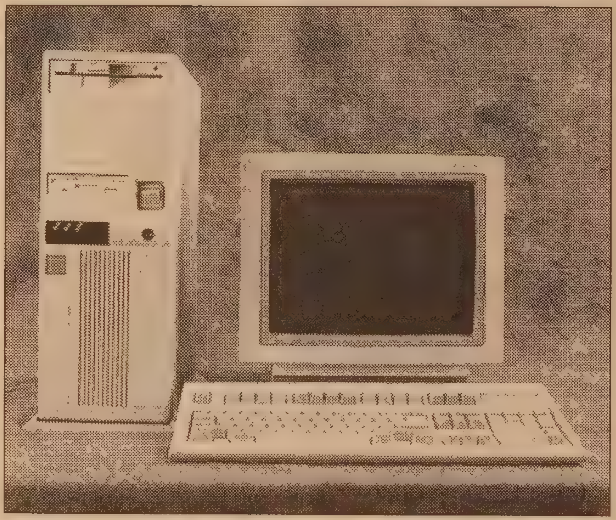

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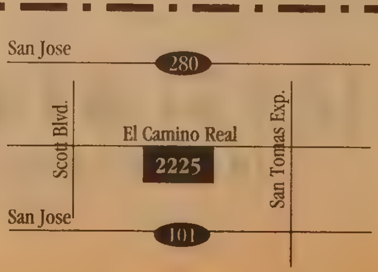

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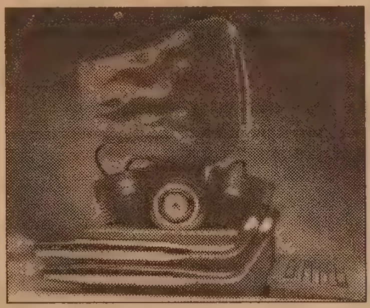

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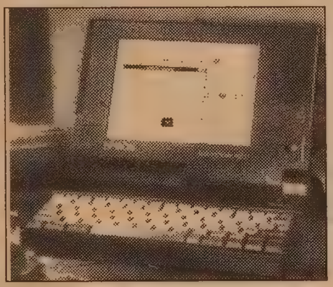

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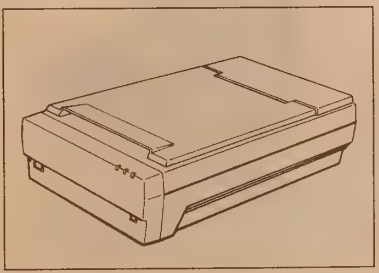
14.4	Faxmodem	$249

ActionScanning ES-600C



- 24-bit color, 8-bit greyscale
- Output 50-600dpi resolution
- Exclusive TruePass™ technology
- Built-in imaging procesing features: brightness, gamma, color correction
- Available for PC or Mac

$796

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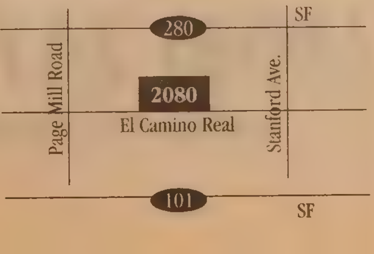

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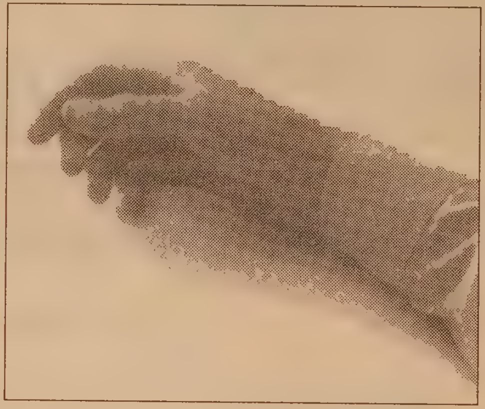
MS Mouse... only at ACCESS

Now You Can Get this MS-Ballpoint Mouse ($169 MSRP) for $19.99

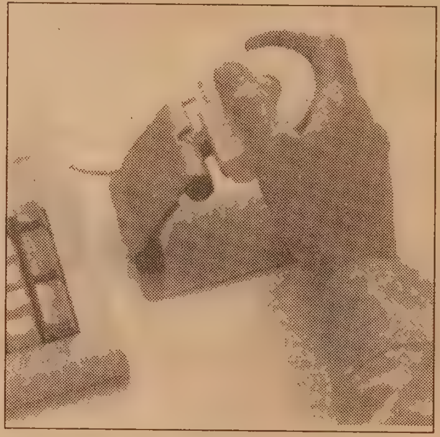
Only at ACCESS COMPUTERS!

Comfort...



The relaxed hand - the most natural, stress-free position your hand can take. Wouldn't it be great if you could work with your hand in this position? Well, now you can...

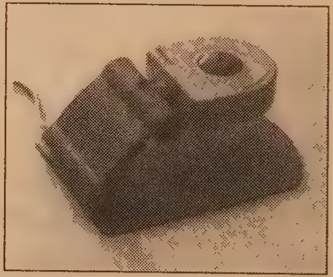
with the Desktop Stand for Microsoft Ballpoint



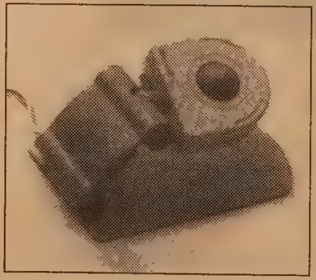
The Desktop stand is ergonomically designed to cradle the Ballpoint mouse and your hand. Its form fits it function. Whether you use the Ballpoint mouse in your right or left hand, and whether your hand is big or small (or somewhere in between), the desktop stand is right for you. It's fully adjustable and that means more comfort as you work.

Ready...

Tilt...



Swivel!



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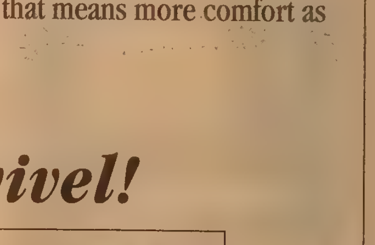
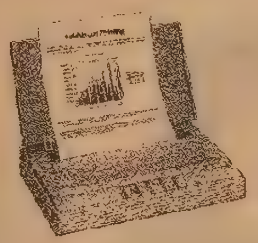


Authorized **Canon** *Sales & Service*



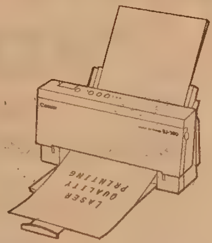
BJ-10sx Portable Bubble Jet Printer

Optional
50-sheet (ASF6420)
Cut sheet Feeder
$79

- Prints 30% faster than 10ex
- Weighs 10% lighter than 10ex
- Text graphics up to 360dpi
- Uses plain paper & transparencies
- 1 year warranty

$249

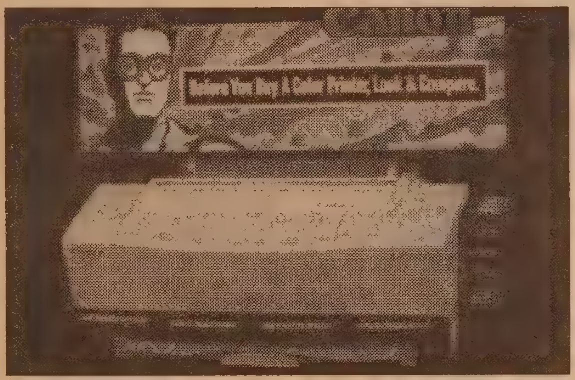
BJ-200e Ink Jet Printer



- 360dpi resolution
- Prints up to 248cps
- 100-page sheet feeder
- 7 resident fonts
- Hold up to 10 envelopes
- 2 Year Warranty

$299

Wide Carriage (11x17) BJ-230 $399



BJC-600 Color Ink Jet Printer

Prints Transparencies!

- 360 dpi
- 240cps draft, 170cps high quality
- 64 nozzles per color
- 16.7 million colors available
- 100-sheet ASF
- 2 year product warranty

Color!

Super Quality! **$588**

innova 486TXC 25 Color Notebook

- 4MB RAM
- 120MB HD
- Active Matrix Color
- 2 PCMCIA slots
- Built-in trackball
- DOS & Windows preinstalled
- One year limited warranty

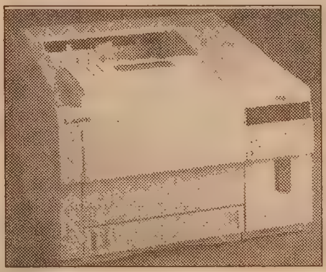
$2999

innova 486NX 25 Notebook

- 4MB RAM exp. to 12
- 120MB IDE HD
- Built-in modem
- DOS & Windows preinstalled
- Built-in trackball
- One year limited warranty

$1499

LBP-860 Laser Printer



Perfect for Home and Business!

- 8 ppm
- 600 dpi
- 2MB RAM exp to 34
- Optional Postscript upgrade
- 2 year limited warranty
- Enhanced PCL5
- Prints transparencies

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LBP-430 Laser Printer

- 4ppm
- 1MB expandable to 5
- PCL-5 emulation
- 22 fonts - 8 scalable
- 2 year limited warranty

$588

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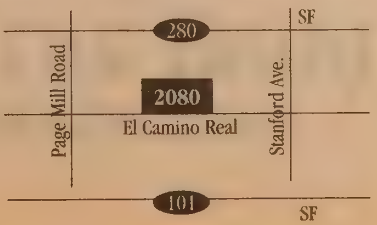

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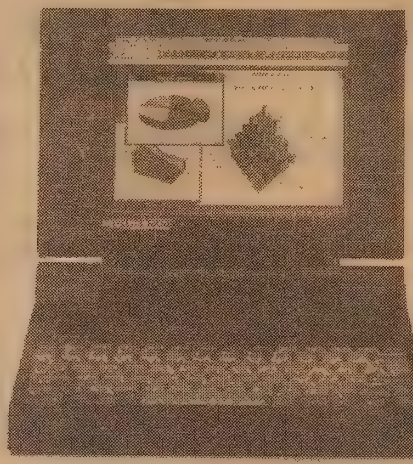
Versa E Notebooks

486DX2-50 MHz COLOR!



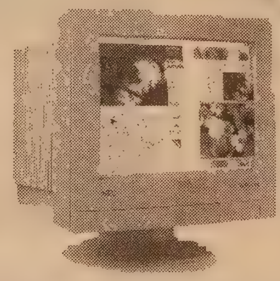
- i486 SL DX2-50 MHz
- 4MB RAM Expandable to 20MB
- Removeable/Reversible Screen
- 340 MB Hard Drive
- 2 Type II PCMCIA Slots
- MS-DOS & Windows
- Front-Mounted Mouse

intel inside

$4899

	COLOR	
DX2-50	With 209MB HD	$4451
DX2-40	With 250MB HD	$4225
DX2-40	With 120MB HD	$3782
	MONO	
DX2-50	With 340MB HD	$3666
DX2-40	With 250MB HD	$2995
DX2-40	With 120MB HD	$2555

NEC



MultiSync Monitor 3V

- 15", .28mm flat square CRT
- 1024x768 at up to 60Hz
- Energy Star compliance
- 3 year warranty

$469

Professional Series	
5FGp 17" 1024 .28	$1129.00
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3FGe 15" 1024 .28 60Hz	$519.00
4FGe 15" 1024 .28 76Hz	$629.00
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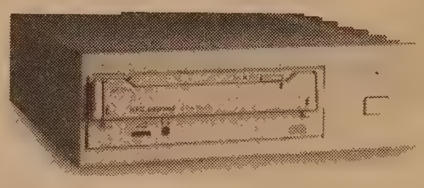
NEC



Triple Speed

MultiSpin CD ROM Drive

- 145ms access time
- 256Kb Cache
- 450Kb/sec transfer rate
- 2 year limited warranty

3Xp	Portable	$429
3X	Internal (CDR510)	$379
3Xe	External	$559

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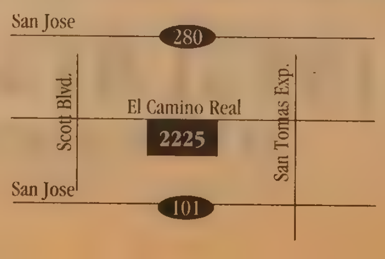

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Motherboard
with CPU

$88 AMA340C

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Motherboard
no CPU

$59 AMA433C

96/24 Ext. Modem

By Wang

$39 ADF92WE

Microsoft Mouse II

$39.99 PMS060T

Cordless Mouse

With 2 rechargeable
batteries
(by Z-Nix)

$22.95 PMS010

3.5" Formatted Diskettes

Sold in boxes of 50

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F340i-W

- 15" FST 0.28mm dot pitch
- Non-glare, anti-static
- 1024x768 resolution@76Hz

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F550i

- 17" FST 0.28mm dot pitch
- FlexScan (30-65 kHz)
- 1280x1024 resolution

$949

T560i

- 17" SA Trinitron 0.25mm grill pitch
- ErgoPanel™ Anti Reflection Anti Static
- 1280x1024 resolution@76Hz

$1599

F550i-W

- 17" FST 0.28mm dot pitch
- 1024x768 resolution @ 80 Hz
- Wide View Full Scanning Function

$1088

F750i

- 21" SA Trinitron 0.31mm grill pitch
- 1280x1024 resolution @ 74Hz
- Dark face, non-glare

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T660i

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- Wide View Full Scanning Function

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Mac Adaptor
included
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17" SVGA Monitor

17", 1024, .26

$899 MTM17

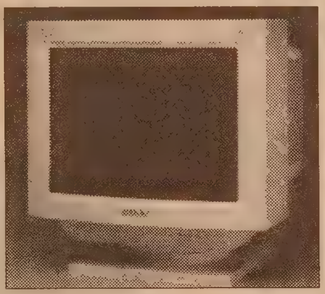
Panasonic
Office Automation OA

PanaSync/Pro

17", 1280, .28

$999 C1795E

SONY



IBM & Mac Compatible

GDM-17SE1

- 1600x1200 max resolution
- .25mm dot pitch
- 50-150Hz vertical scan range
- Energy Star compliant

$1050

CPD-1320	14"	640	.25	329.00
CPD-1730	17"	1024	.25	949.00
GDM2036	20"	1024	.30	1799.00

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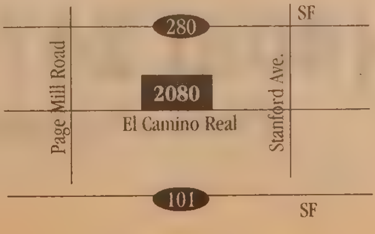

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ProMovie Spectrum 16	$99
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New products from... MEDIA VISION

RENO Portable CD-ROM Drive

The fastest, most versatile portable CD-ROM

- 180ms double speed
- SCSI for PL or MAC
- Run on AC Power or NiCad batteries
- Plays CD ROM or audio CD

HDM400 **$299**

Premium Deluxe Multimedia Kit

Featuring Reno Drive w/ 3D Sound Card

- Now fastest portable drive
- State-of-the-art 3D Sound Card
- Speakers, case and microphone
- 15 CD-ROM titles

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Pro Deluxe Multimedia Kit

Featuring NEC Triple Speed Drive with 3D Sound Card

- 195ms triple speed drive
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- Speakers and Microphone
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HDM5000 **$699**

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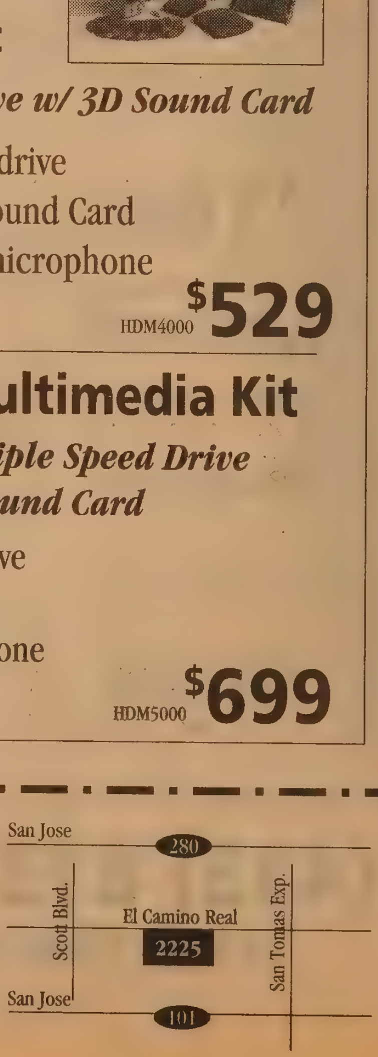

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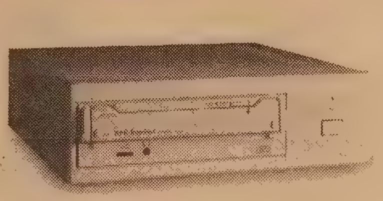
Panasonic

Dual Speed, Internal
CD-562
I/F extra

HDP562 **$139**



PHILIPS

Internal CD-ROM Drive
Internal Driver, interface
Cable included

HDP205, CDR056 **$89**

ORCHID

Dual Speed
Internal CD3110

HDO3110 **$199**

NEC

Triple Speed
3X Internal Drive

HDN510T **$379**

MITSUMI

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Internal, 250ms Access
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Play Computer Games on your TV!

TV Gamer Plus

- Supports up to 24-bit true color
- Use for Business presentation
- Bonus game software
- 5 year/limited warranty

ADS311 **$169**

Popular CD Titles from 9^{99}

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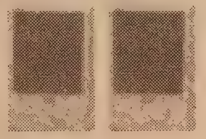
Compton's Encyclopedia
Family Doctor
Stellar 7
World Atlas
American Bus. Phone Book
So Much Shareware II
and many more...

Accessories

Labtec Speakers



CS150	$18.99	SS700	$29.99
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System Cleaning Kit

Cleans: Monitor, Keyboard, printer, drives

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CD CADDY $5.99	**SPEAKERS** $4.77
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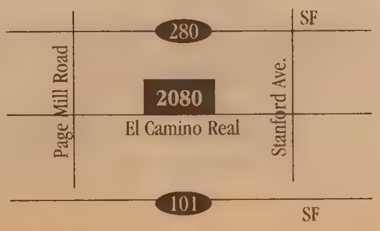

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Mobile Office Solution Source Center

Panasonic
Office Automation OA

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KX-P1150	$139	KX-P3624	$399
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2nd Inventory - with original factory warranty

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APPLE® LaserWriter Select Postscript Laser for Mac

- 600dpi, 10ppm
- 75 Scalable fonts
- Postscript Level II
- Compatible for Mac or Windows
- PCL-5 emulation
- Toner included

New!

CAM360, CAM360T **$1555**

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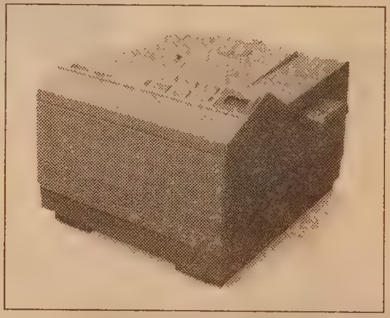
Parallel/SCSI Converter

Converts the parallel port to SCSI!

The perfect connection for CD-ROM Drive to your Notebook!

ADH100 **$199**

HEWLETT PACKARD



LaserJet

4	$1368.00	4L	$666.00
4M	$1850.00	4P	$949.00
4MP	$1299.00	4Si	$2895.00

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310 Portable	$299.00	550C	$499.00
500	$259.00	560C	$569.00
500C	$398.00	1200C	$1388
520	$299.00		

Ergonomical Design in Teal or Graphita Color Case!!

ARCHE

486SLC-33MHz

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- 4MB Expandable to 8MB
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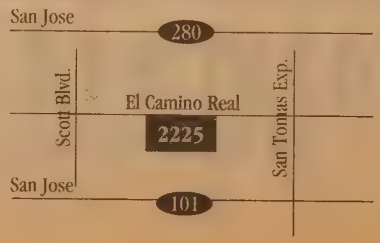

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The Intelligent Choice in Data Communications

Sportster Modems

The 14.4 Fax Modems

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- V.42/MNP5
- Easy installation
- 5 year limited warranty

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External	139.95

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Internal Faxmodem for Windows

MX Stealth
Fax Modem

- 14.4 send/receive data fax
- MNP 5 & V.42 bis
- WinFax Lite™ fax software
- Microphone LT/Windows™ software

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9600/2400 bps fax modems

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14.4/14.4 fax modem

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FUJITSU 101-key 4700	59.00
SUNTOUCH ALPS 101-key	57.00
MAXISWITCH Nova 9200	29.00
FOCUS	
8000 101 Key W/Calculator	49.00
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Keytronic	
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NOVELL

3.12 Version

5 users	$599	50 users	$2699
10 users	$1349	100 users	$3799
25 users	$1999	250 users	$6499

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SMC		
NIS016T	Elite Plus 16-Bit TP	139.00
NIS016CE	Ethercard 16 Ultra Coax 16	119.00
3COM		
NIE0163T	Ethernet III TP NIC	119.00
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NI81205	Ethernet Card 10TP 5pack	499.00
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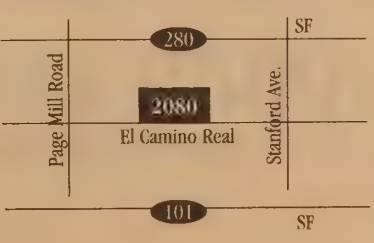

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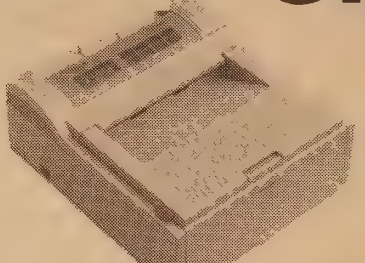
OKIDATA®



Lower Price!

OL-400e
LED Page Printer

- Compact Size and sleek design fits comfortably on any desktop
- Fast 4ppm printing with RISC microprocessor for higher productivity
- 44 fonts for great-looking correspondence and reports
- Perfectly compatible with virtually all software applications

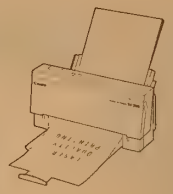
$479.99

OL410e

- 600 dpi resolution
- 4 ppm

$688

Canon
BJ-200 Ink Jet

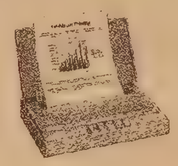


- Prints up to 248cps
- 100-sheet feeder
- Optional ASF
- 90-day Warranty

* Refurbished Printer

$209*

Canon
BJ-10ex
Portable Inkjet



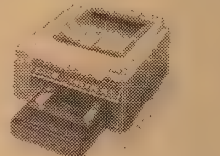
- Prints up to 84cps
- Weighs only 4 lbs.
- 90-day Warranty

* Refurbished Printer

$149*

Panasonic
Office Automation

KX-P4410



2nd Inventory!

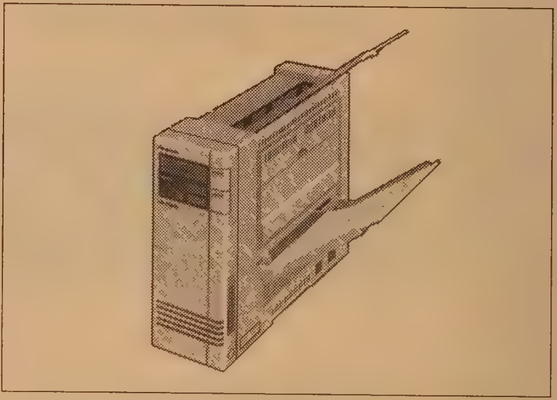
- 5 ppm
- HP IIP emulation
- 512K exp to 4.5MB
- 200-sheet multipurpose tray
- 1 year warranty

* Refurbished Printer

$449*

Panasonic
Office Automation

KX-P4400
SideWriter



"Small Footprint But Gigantic Feat"

- 4 ppm
- 512K Standard Memory
- 300dpi resolution
- HP Laserjet Series IIP
- 100 sheet multi-purpose paper tray
- 1 year limited warranty

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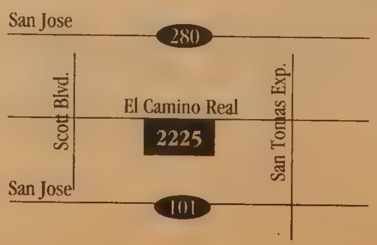

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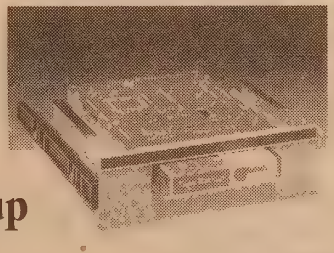

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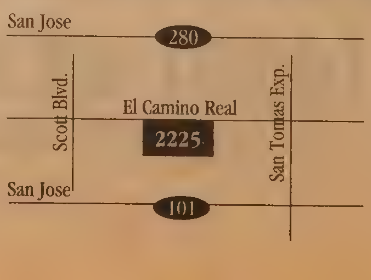

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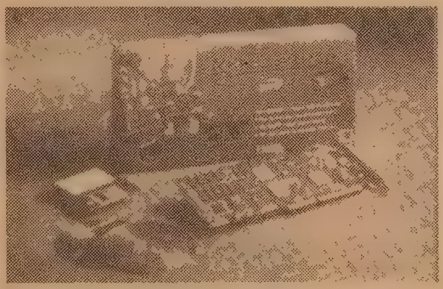

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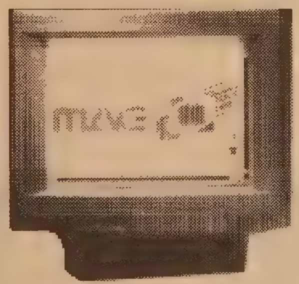

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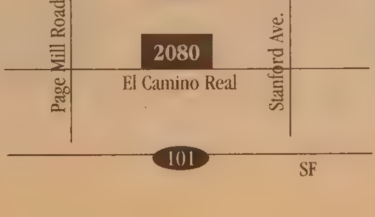

Continued from page 32

hand and you're promising to hit us with only the flat side of it, but the Chinese don't see it that way; they're already licensing fax machines and they're gonna need a lot of new hardware to gear up for Tiananmen II.

I've talked a long time, but I want to finish by saying something about the NSA guy's one real and actual argument. The terrors of the Brave New World of free individual encryption. When he called encryption enthusiasts "romantic" he was dead-on, and when he said the results of spreading encryption were unpredictable and dangerous he was also dead-on, because, people, encryption is not our friend. Encryption is a mathematical technique, and it has about as much concern for our human well-being as the fact that seventeen times seventeen equals 289. It does, but that doesn't make us sleep any safer in our beds.

Encrypted networks worry the hell out of me and they have since the mid 1980s. The effects are very scary and very unpredictable and could be very destabilizing. But even the Four Horsemen of Kidporn, Dope Dealers, Mafia, and Terrorists don't worry me as much as totalitarian governments. It's been a long century, and we've had enough of them.

Our battle this century against totalitarianism has left terrible scars all over our body politic, and the threat these people pose to us is entirely and utterly predictable. You can say that the devil we know is better than the devil we don't, but the devils we knew were ready to commit genocide, litter the earth with dead, and blow up the world. How much worse can that get? Let's not build chips and wiring for our police and spies when only their police and spies can reap the full benefit of them.

But I don't expect my arguments to persuade anyone in the NSA. If you're NSA and I do somehow convince you, by some fluke, then I urge you to look at your conscience—I know you have one—and take the word to your superiors and if they don't agree with you—*resign.* Leave the Agency. Resign now, and if I'm right about what's coming down the line, you'll be glad you didn't wait till later.

But even though I have a good line of gab, I don't expect to actually argue people out of their livelihood. That's notoriously difficult.

So CFP people, you have a fight on your hands. I'm sorry that a community this young should have to face a fight this savage, for such terribly high stakes, so soon. But what the heck; you're always bragging about how clever you are; here's your chance to prove to your fellow citizens that you're more than a crowd of net-nattering MENSA dilettantes. In cyberspace one year is like seven dog years, and on the Internet nobody knows you're a dog, so I figure that makes you CFP people twenty-eight years old. And people, for the sake of our society and our children you had better learn to act your age.

Good luck. Good luck to you. For what it's worth, I think you're some of the best and brightest our society has to offer. Things look dark but I feel hopeful. See you next year in San Francisco. ■

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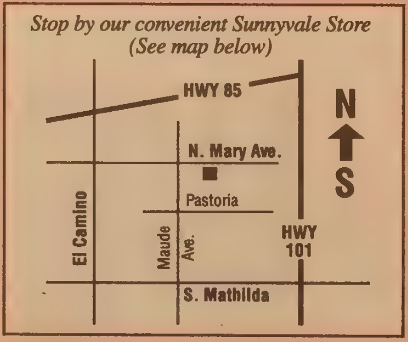

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kids And BMUG

Also: Yet Another Virus

BY DAVID MORGENSTERN

BMUG

Last month we celebrated BMUG's tenth birthday with our somewhat annual MacFest on the UC Berkeley campus. The MacFest, which in years gone by was known as MacToberFest, MacTurkey Fest, and BMUG GUI Fest, is a day-long gathering of local members. The name change would depend on the time of the year or the particular philosophical computer angle we were pushing at the moment. The GUI Fest was the debut of our short-lived welcoming of Windows.

As we cleaned up the hall, I was struck by all the kids. The latest crop of little BMUG rug rats zoomed around the floor. The BMUG "kids" that just a short time ago came together, sharing and hollering about our favorite techno-toys, have spawned a future generation of peanut gallery denizens. Some may hang out in our online meeting-space, while others will still make the trip to "real" meetings. But they and their parents alike will have the BMUG spirit, the giving and sharing of information.

ALL KIDDING ASIDE

During my commute to work the other day, I indulged in a bit of over-the-shoulder reading of a neighbor's paper. The woman was reading a local newsletter for parents, which was filled with classes, summer camps, and day care that pushed computing for children. We're not talking junior high or high school, rather groups for three- to five-year-olds! Amazing and alarming.

I have some problems with these programs and with pushing kids into computing at a very early age. However, I admit up front that I have had little experience. My daughter, Ariela Maija Morgenstern, is in high school now, and was an ancient seven years old when we brought our Mac 512E into the home.

I have made different types of computing experiences available to her—games, educational materials, email, Internet, wordprocessing, HyperCard, and so on. Some have been well received, while others have been cold-shouldered. A couple were altogether too successful and pushed me into the poorhouse with serious online charges. Perhaps a little less online chat and a byte more homework? An opportunity for some typical parental authority speechmaking.

So here I go with a mild rant and rave, with a couple of tips tossed in:

- The model is not the object and the map is not the place. Computers model the real world in many ways. The Mac is designed so that the gestures and paradigms of interface are directly related to the real-world experience that we've had throughout our lives.

The models can be found in every application and in the general desktop interface we "live" in. Graphic tools have pencil and brush functionality. Documents look like pieces of paper that we can place in folders, or in the trash. The physical keyboard and virtual paper computer interface I'm using to enter this text into the column is based on a hundred-year experience that people have had with typewriters. We take this interaction for granted.

We can spend all day and night talking about the rights and wrongs of a particular interface implementation, but one of the fundamental principles of Macintosh interface design is relating computer functions to physical world analogs. We are consciously comfortable with these familiar concepts, and it's one of the reasons why the Mac has done so well for so long.

But children do not have as much experience in the real world. They are not simply smaller versions of ourselves, with the same ingrained thought patterns as adults. In a pre-BMUG existence, I studied magic and prestidigitation. Magicians will tell you that young children are the hardest audiences. This is because they have a tenuous connection with the principle of cause and effect that magic relies heavily upon. Kids don't always share the same basic assumptions of the universe that we geezers do—at any age, darn 'em. But eventually around seven or eight, we all settle into the up-down walk-on-green world around us.

Young kids need to spend time making "real" mud pies and not silicon pies. They need to have the direct experience of having their bodies and minds influence the physical world. Manipulating a virtual airbrush is not the same as finger painting. I suggest that kids need to start with the latter. They need the grounding in the tools and happenings of reality-time systems.

- Kids will be pressured to explain the world of computing to their parents. Every person and family is different from the next, each with their own particular dynamics. Some people are control freaks and others lackadaisical. Many BMUGers love their Macintosh, while perfectly sane and reasonable people are fearful of computers.

I worry that some parents, especially the technophobic, will put all responsibility for a family's technology transfer onto the shoulders of the children. The parents decide they certainly can't do this or that, and hand it all off to the kids. Computers are the future and you are the family's future—so explain it to us.

While recently browsing in a computer store I ran across *Kermit Learns Windows: Starring Jim Henson's Muppets*, a Muppet Computer book. "Here's all the fun and magic of using computers—directly from Kermit and the Muppets... It's so easy even grownups will enjoy the experience—especially if they have been reluctant to use Windows before!" This is no joke; it's a real series of books "for ages 5 and up!" Daddy, can you read the part on printer driver errors again? Please, please? Huh?

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Computers are very complex and some kids will quickly sprout wings and fly in the ether. But not all kids. Hopefully these children will use computers as another tool, but will not treat them as objects of worship.

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• The computer can be a great way to bring parents and kids together. You can work together to solve problems, do a report, create a presentation, and learn. The learning is not necessarily just the content that the child must master, but learning with you about the computer itself. The BMUG meeting game, take-home version.

• It's important for children around the fourth or fifth grade to learn to type. Kids should be doing their own work on the computer, not you typing things in for them because "it's easier that way."

By the time they are in the sixth grade, they can do it all themselves. My daughter did all her own word-processing at that time and it worked fine. She learned how to properly enter into the EndNote bibliographic database program the materials she used for her school reports. It's a great program for students young and old.

BMUG

• Games are not learning. It's a no-brainer. Some learning games may be acceptable, but they should be an addition to hitting the books.

Don't fool yourself that playing games is any substitute for constructive work on a computer. The "it's okay because they're overcoming their fear of the computer" is a lazy family policy, especially for the Nintendo-type game machines. Give me a break!

I love computer games, but they need to be balanced with other useful world and computer exploration. There's a lot that can be learned about life from a hand of poker, too. But it's something you want to save for graduate study.

BMUG PARENTAL UNITS

I asked a couple of new-ish BMUG parents to share some of their computer-child experiences and thoughts:

• **Avi Rappoport**, programmer and mother of David. "I can't speak for all parents, since I'm only one. But we certainly use computers a lot, both for work and for fun, and have several in our house. Our three-year-old son David is in a KidPix phase right now, but he's gone weeks where he shows no interest in the computer at all.

"I see computers as tools for kids, just as they are tools for adults. The computer is not the goal, although some of us get confused about that. David's goals are usually to make pretty pictures, and he likes using KidPix in particular because it has some kid-specific features, like rainbow fills and stamps.

"This morning, he spent a good fifteen minutes drawing a 'big fire' with red and yellow and purple and blue and black and brown. He still has some trouble controlling the mouse [don't we all?], but likes to use the tools to make shapes that he can't draw freehand, such as circles and squares.

"The computer is definitely entertainment to David, when we're playing with Manhole or Just Grandma and Me, and even Millie's Math House. He likes to play racing car games with his dad, and watch and listen to the aliens in Master of Orion [a DOS space conquest game]. But he'd just as soon pretend he's a daddy mouse, push his cars across the couch, read a book, or play Chase Me.

"Some people think that computers are inherently bad for kids, but I don't really understand why. Sure, using a computer to babysit isn't right, and trying to make little kids 'learn' on the computer is stressful. But it's not the computer that's the problem in those cases—it's the parents.

"If parents and kids work on the computer with each other, the togetherness itself is very nurturing and valuable. And anything that lets a kid draw and make sounds and otherwise be creative can be a great tool."

• **Tom Santos**, the "Tom" of MACadam Computers in San Francisco and Brian's dad. "I'd rather have a child pound the keys than a cat. Their fur is really hard to clean out. I gave Brian a 512K Mac keyboard with all the keys glued down. But he really wants to use the one hooked to the screen. He knows the difference.

"If they have an interest then it's great. After all, it's a Mac and they can't hurt anything. I think the games that teach something are good. They give a challenge to the kids and they learn something at the same time. Flash cards, but more interactive.

"It's best if kids have the opportunity to use the Mac as a proper tool. They can learn that they can get things done, instead of just fooling around. They can get a report done fast and have the time to get outside to play.

continued on page 280

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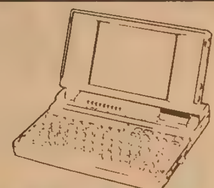

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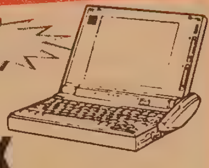

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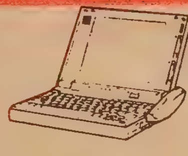

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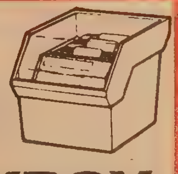

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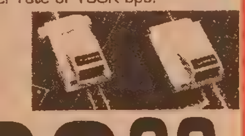

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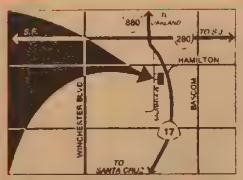
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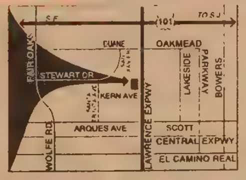
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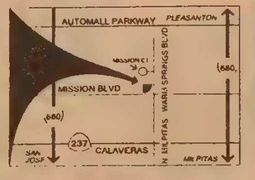
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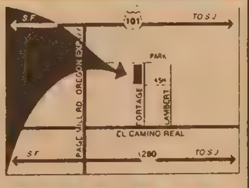
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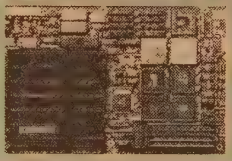

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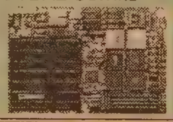

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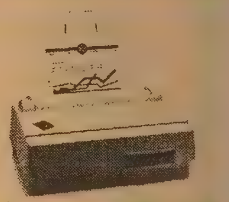

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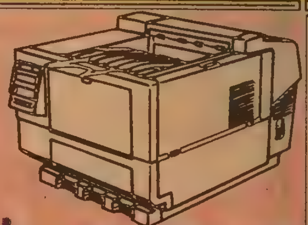

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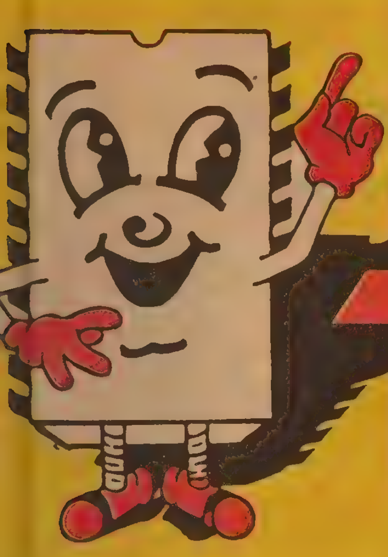

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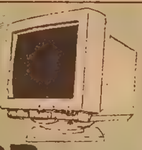

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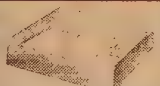

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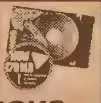

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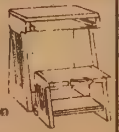

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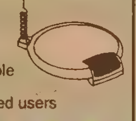

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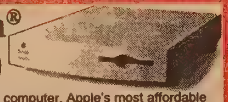

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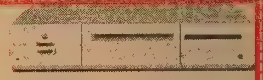

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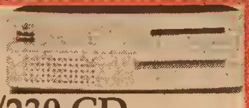

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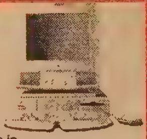

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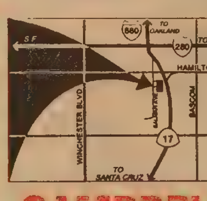

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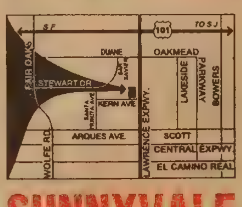

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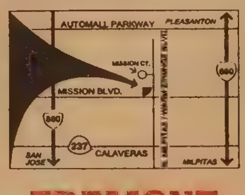

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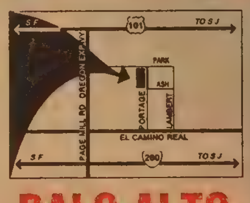

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Includes Cable
CM2080

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Apple® 14" Color Display

The Macintosh Color Display offers all the benefits of a Macintosh Monitor - and sets new standards for performance. With this display, you'll see right away that lines are perfectly straight. Edges are sharp. Colors are pure and uniform. And image definition is crystal clear over the entire area of the screen, even in your finely detailed drawings.

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The new Apple® Macintosh® Color Display provides the high quality and practical ergonomic design you expect from Apple. Its color and gray-scale capabilities give you versatility for a variety of projects. And the enhanced electronics allow this 14" monitor to display full-color images with photographic quality. The display's low, stable center of gravity keeps it from being easily tipped over, and its built-in tilt-and-swivel base make adjustment easy.

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See more of your work—in bright, vivid color—in a more comfortable and efficient environment with the Apple® Macintosh® 16" Color Display. It delivers a combination of performance, comfort, and convenience not found in other displays. The 16-inch screen gives you 70 percent more work area than standard monitors. Not only can you see multiple windows of text and color graphics at the same time, you can also access disk volumes and the trash while a full page-width document is open.

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Myst is an adventure game unlike any other, with stunning 3-D photo realistic worlds. Myst is a surrealistic exploration, where every vibrant rock, scrap of paper and sound may hold vital clues to your unraveling a chilling tale of intrigue and deceit.
Mouse, hard disk, System 7.01 or higher and a CD-ROM drive required

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The Seventh Guest is the first interactive drama in a terrifyingly real, virtual environment complete with live actors. Key Features:

- 22 fully-rendered rooms to explore in a fully 3-D haunted mansion with ghostly surprises lurking in every shadow.
- Video clips with live actors.
- Bizarre games and puzzles.

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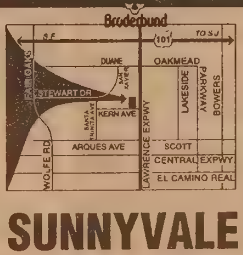

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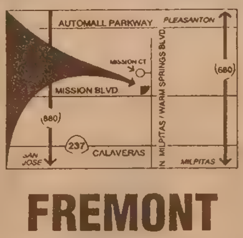

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Disk repair that's so advanced, it's simple. Now with AutoCheck, MacTools Deluxe includes Disk Repair, Trash Recovery, File Restoration, Anti-Virus, Backup, Disk Optimization, and FastCopy Duplication.

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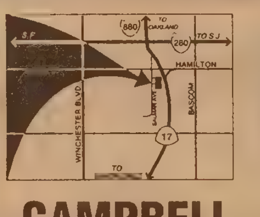

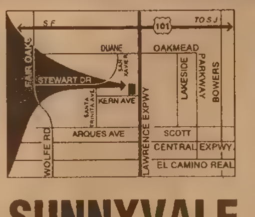

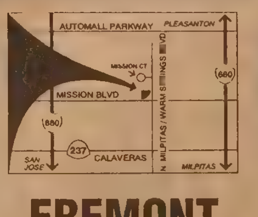

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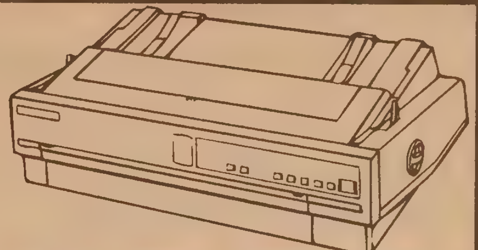

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- 360 DPI

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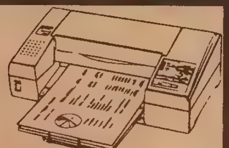

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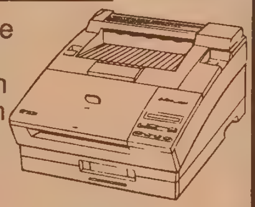

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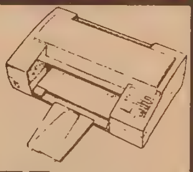

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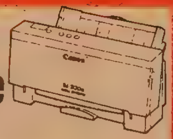

- 360 dpi for Laser-Quality Graphics and Text
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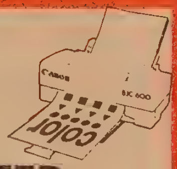

- Prints 360 DPI on plain paper for brilliant color quality.
- 100 Sheet automatic feeder for easy paper handling
- Easily handles letter and legal size paper, also envelopes and back print film.
- Comes with a 2-year limited warranty.

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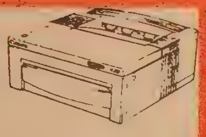

- 300 dpi and Super Fine Toner for Superior Print Quality
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- 100 Sheet Universal Paper Tray Handles Several Paper Sizes
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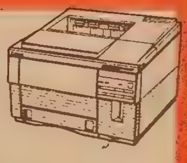

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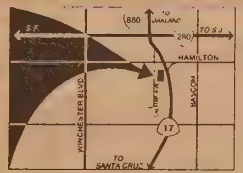
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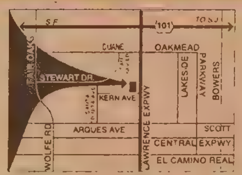
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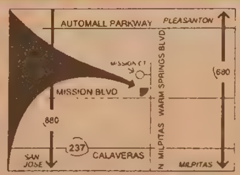
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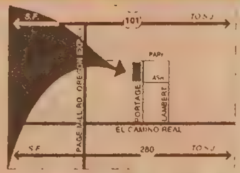
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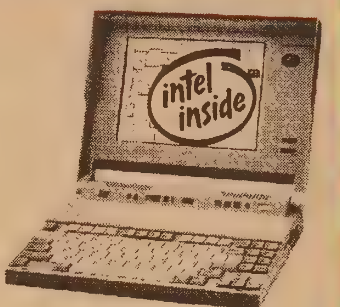
486SL 25MHz



85MB NOTEBOOK

25MHz 80486SL CPU • 4MB RAM • 85MB Hard Drive
3.5" 1.44MB Floppy Drive • Serial/Parallel • VGA Output Pointing Device
4 hr. Battery • Built-in Fax/Modem 5.2lbs.

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Model
2168-E35
#1772564

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IBM® PS/1® with Rapid Resume.

2618-M40

486SL 25MHz

128MB NOTEBOOK

486SL-25MHz CPU • 4MB RAM • 3.5" 1.44MB Floppy Drive • 128MB Hard Drive • Serial/Parallel /VGA Output • Pointing Device • 5 hr. Battery • Built-in Fax/Modem • 5.2lbs.

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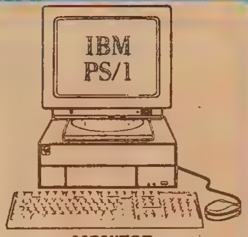
2133-18T

486SX-33MHz



170MB VGA SYSTEM

MONITOR SOLD SEPARATELY

Intel 486SX 33MHz CPU • 170MB Hard Drive
4MB Memory • 3.5" 1.44MB/5.25" 1.2MB Floppy Drives
3 AT Slots • Novell® certified • Local Bus SVGA
IBM Mouse • IBM Keyboard • Internal Modem
Preloaded Software: DOS 6.0 • Windows 3.1 • Works for Windows • PRODIGY • P/S1 Tutorial, Index, Fitness, Virus check • PS/1 Edition American On-line
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486DX2-50MHz

340MB SVGA SYSTEM

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Local Bus SVGA • IBM Mouse • IBM Keyboard • FAX/Modem
Novell® certified • Preloaded Software: MS DOS 6.0
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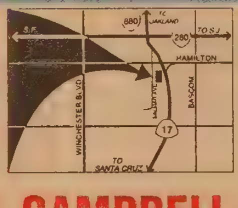
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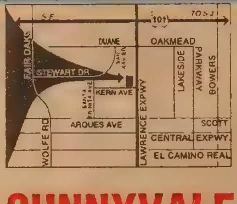
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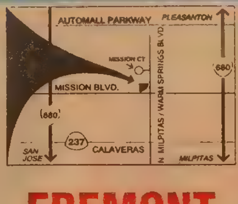
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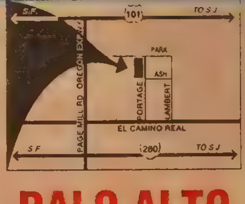
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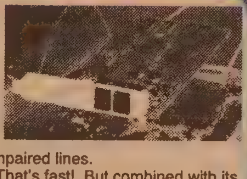

All-in-one high-speed V.32bis Fax/Modem

Delivers the highest performance, reliability, and compatibility in the industry. Tested and proven to be the leader in connecting calls, even on noisy, impaired lines.

The DataPort 14.4/Fax Modem delivers data at line speeds up to 14,400 bps. That's fast! But combined with its advanced, optically-coupled phone line interface and V.42bis data compression and error correction, you gain effective data throughput of up to 57,600 bps—nearly 24 times faster than 2,400 bps modems—on "real world" phone lines! This high performance significantly saves long distance costs.

The DataPort 14.4/Fax Modem expands your personal computer into a fax workstation. You can send and receive faxes without ever waiting in line; and send presentation-quality faxes!

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AT&T

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- Cables included

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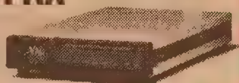

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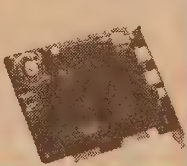
2400 BAUD INTERNAL MODEM



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- Full or half duplex operation
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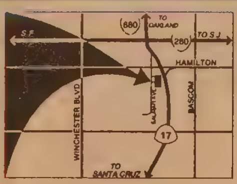
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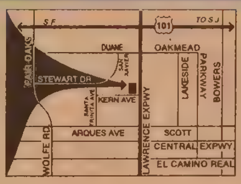
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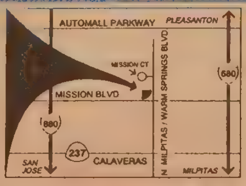
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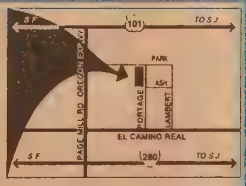
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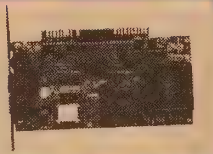

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It is compatible with all Group III fax machines and will receive at 9,600, 4,800, or 2400 BPS. FaxMe runs without software and without a computer.

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- Data compression with v.42bis and MNP2-4.
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V.32bis • Class II

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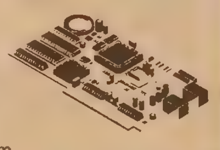

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MNP 2-5 Hardware • V.42BIS

Windows and DOS Compatible

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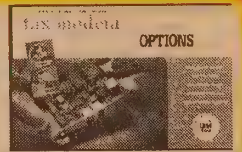
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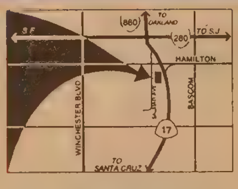
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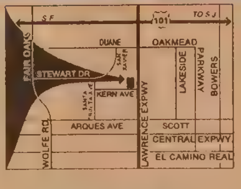
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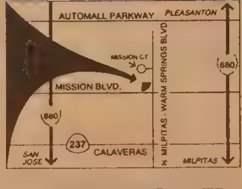
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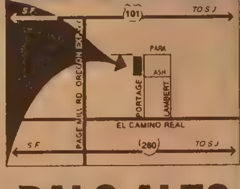
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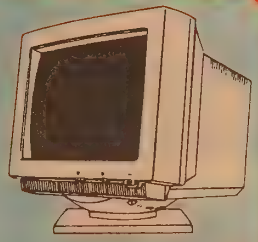

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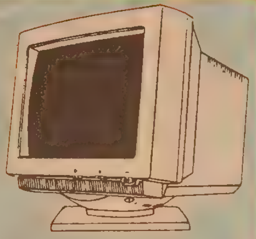

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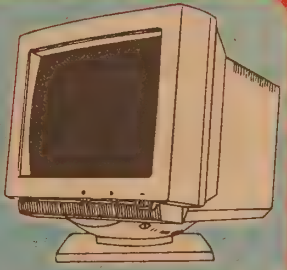

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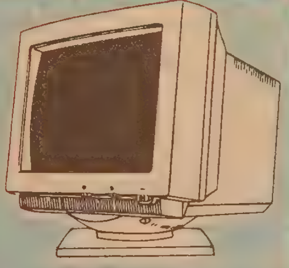

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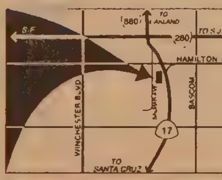
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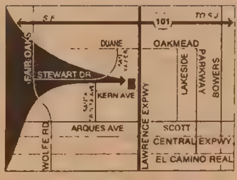
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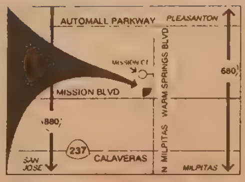
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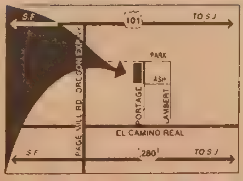
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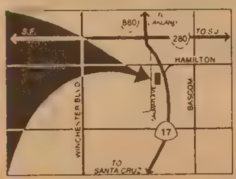
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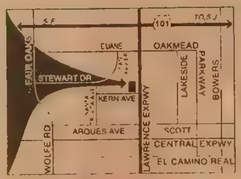
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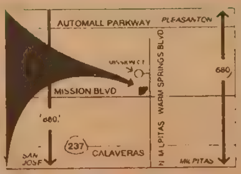
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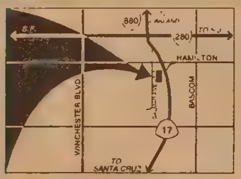

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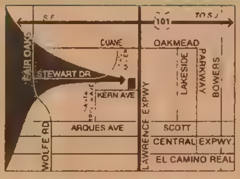

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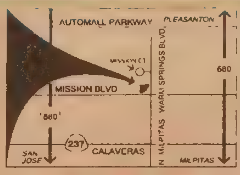

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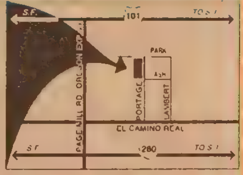

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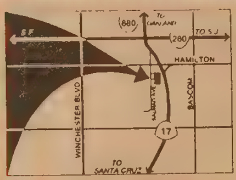
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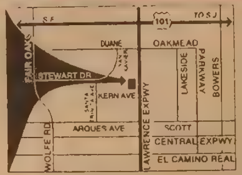
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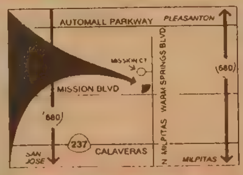
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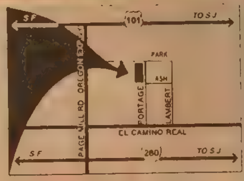
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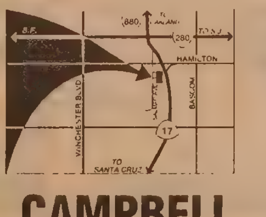
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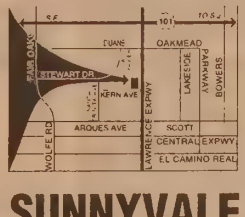
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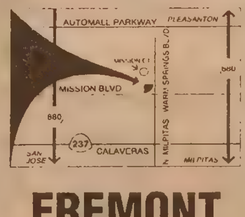
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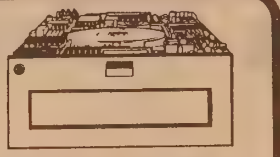

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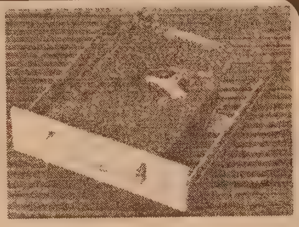

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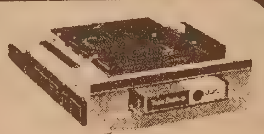

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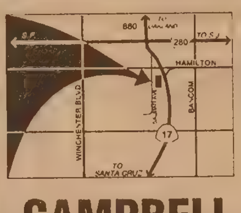
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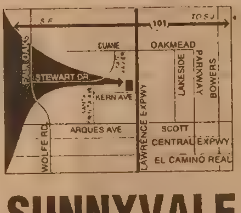
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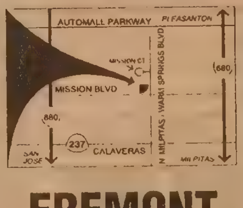
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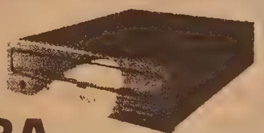

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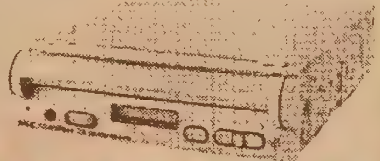

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CD-ROM Drive
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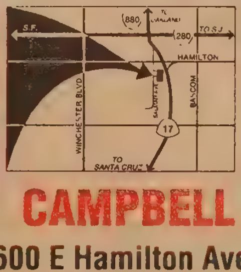
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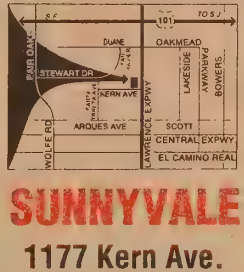
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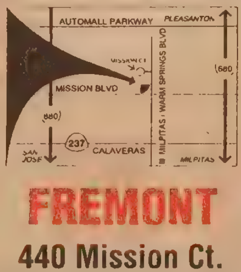
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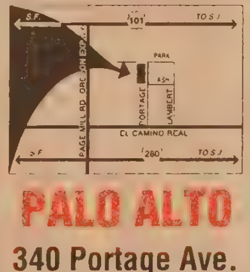
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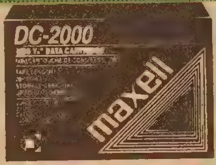

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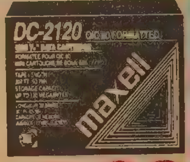

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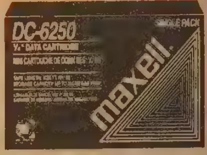

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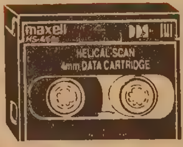

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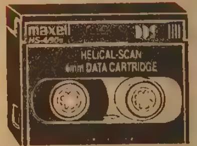

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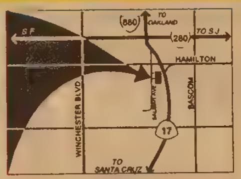
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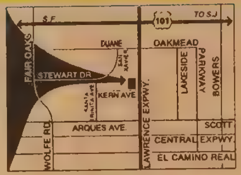
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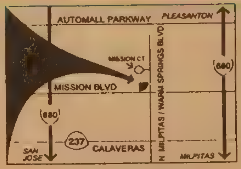
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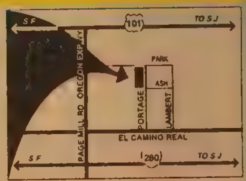
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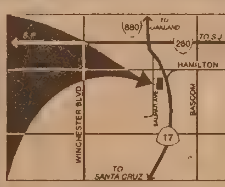

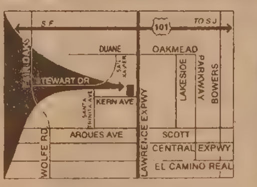

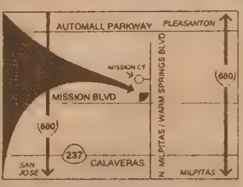

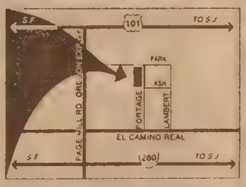

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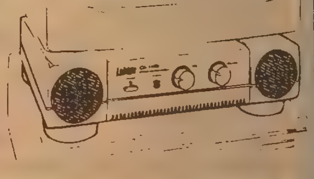

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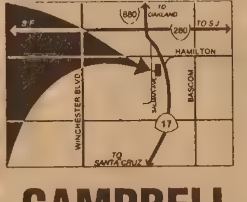
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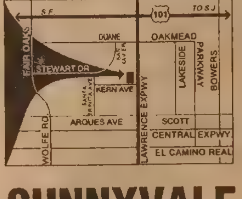
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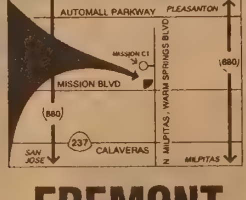
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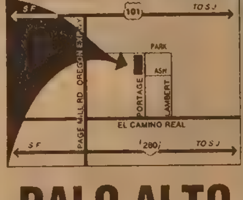
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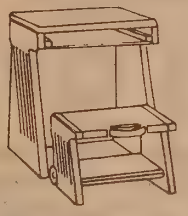

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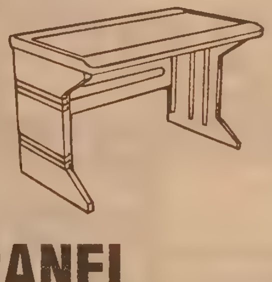

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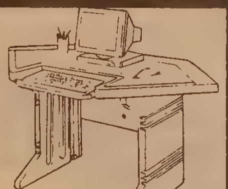

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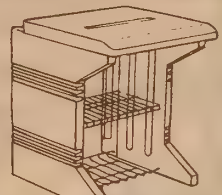

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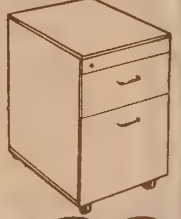

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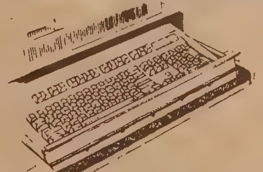

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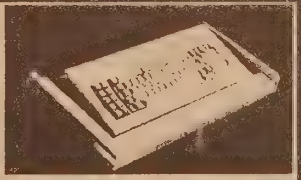

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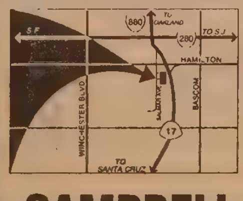
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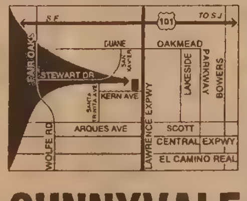
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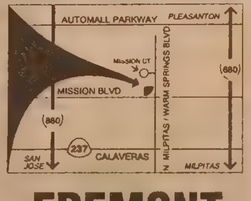
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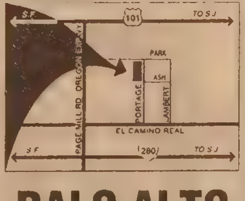
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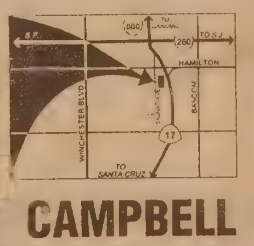

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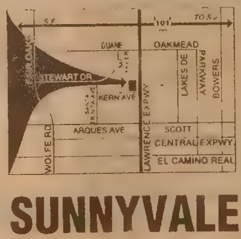

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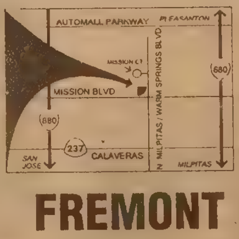

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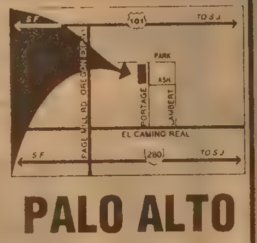

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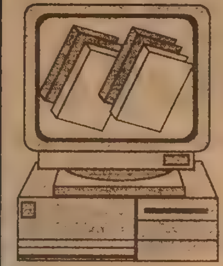

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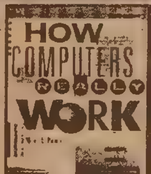

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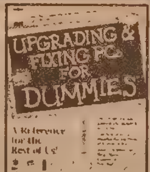

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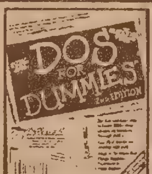

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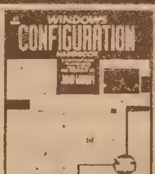

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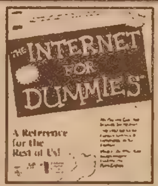

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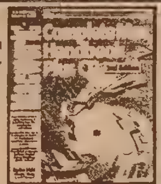

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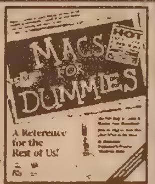

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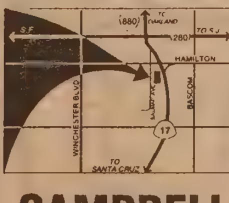

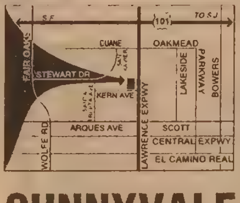

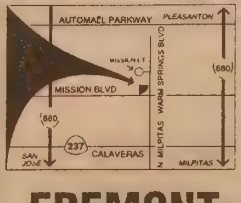

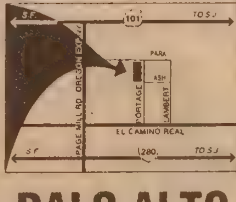

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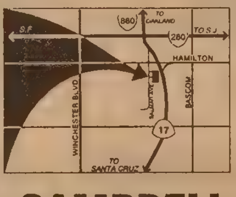

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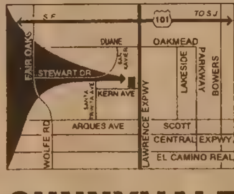

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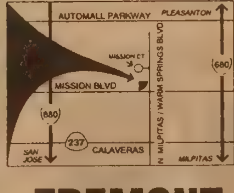

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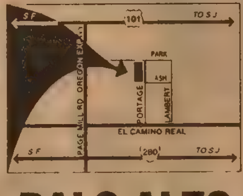

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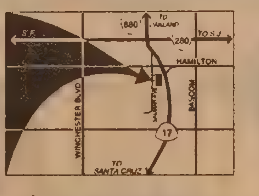
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280
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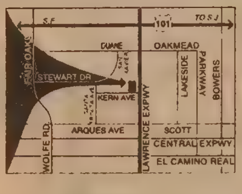
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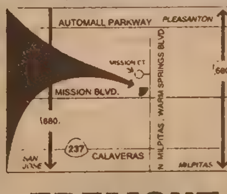
AUTOMALL PARKWAY
PLEASANTON
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SAN JOSE
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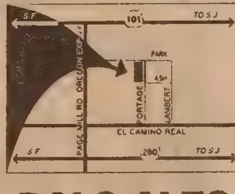
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PARK
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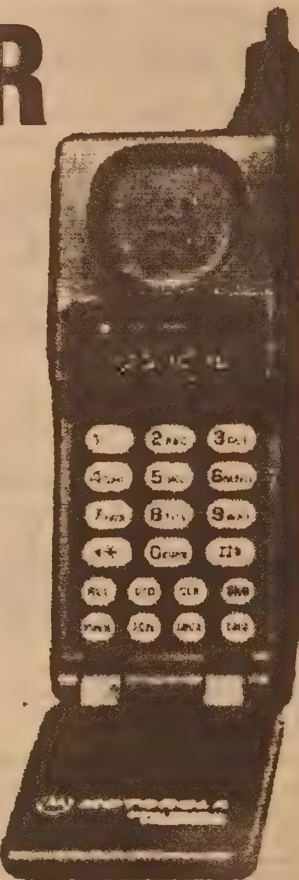
MOTOROLA

CELLULAR FLIP PHONE



This premium value cellular phone from Motorola comes equipped with 30 number memory, LED display, call timer, signal strength meter, a battery with 75 minute total talk time, and an overnight charger for only...

$229⁹⁵*

Model DPC-550
#1635999

*After **$25** Instant Service Activation Rebate. Price w/o Activation **$254⁹⁵**

MOTOROLA

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ALPHA MICRO-TAC CELLULAR PHONE

If it's small and lightweight you're looking for, this is the cellular phone for you! With its 101 alphanumeric memory, a desktop charger, and standard battery, this technologicaly advanced cellular phone can be yours for only...

$349.95*

Model DPCAC
#1635988

*After **$25** Instant Service Activation Rebate. Price w/o Activation **$374.95**

MOTOROLA

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MICRO TAC LITE CELLULAR PHONE

This popular pocket-sized cellular phone from Motorola combines convenience and high performance with features that include 101 alphanumeric memory, retractable antenna, dual NAM, automatic redial, super speed dialing, battery, overnight charger, carry case and more. Now just...

$519.95*

Model Micro Tac Lite
#1705832

*After **$25** Instant Service Activation Rebate. Price w/o Activation **$544.95**

MOTOROLA

MICRO TAC ULTRA LITE CELLULAR PHONE
WITH VIBRA CALL

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Motorola's lightweight champion of cellular phones tips the scales at only 5.9 ounces and contains a unique ring selector that includes a setting for vibrate, just like a pager! Other features include 101 alphanumeric memory, memory scroll, recall, two batteries, rapid charger, carry case, and more for only ....

$699.95*

Model Micro Tac
Ultra Lite
#1794986

*After **$25** Instant Service Activation Rebate. Price w/o Activation **$724.95**

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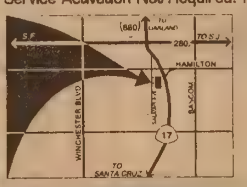
Service Activation Not Required. No Sales To Dealers Or Resellers. Limit One Per Family.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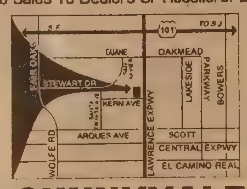
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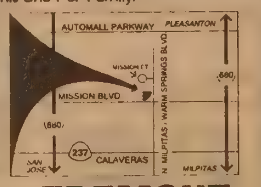
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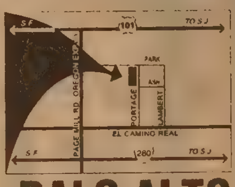
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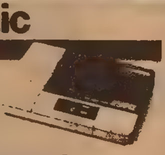
ANSWERING MACHINES

Panasonic



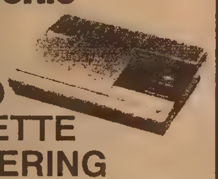
ANSWERING MACHINE

Answering system with Auto-Logic Operation, Tone Remote Control, Digital Display, Message Memo Recording and Remote turn on, Auto-Logic Operation Automatically Rewinds, Plays Messages, Stops at the Last Message and Resets itself at the Touch of One Button.

$\$39^{99}$

Model
KX-T1000
#1498194

Panasonic



DUAL MICRO CASSETTE ANSWERING SYSTEM

Panasonic's new dual micro cassette answering system offers an LCD Call Counter, marker message, room monitor, auto disconnect, electronic auto disconnect, electronic volume control, audible message alert, and much more for only...

$\$69^{95}$

MODEL
KX-T2100
#1740208

Panasonic

ALL DIGITAL 4 MAILBOX ANSWERING SYSTEM

W/SPEAKERPHONE & VOICE TIME/DAY STAMP

Panasonic's fully featured answering system comes equipped with 30 minute storage capacity, voice time/day stamp, speakerphone, voice menu, 4 personal mailboxes with security, lcd display, message scan, programmable alarm, message transfer, 2-way record, selective message delete, message skip/repeat, auto disconnect, auto redial, 10 number memory, and much more! An invaluable addition to any home or office at just...

$\$199^{95}$

MODEL
KX-T2880
#1841989

MULTI-LINE BUSINESS PHONES

Panasonic

TWO LINE PHONE

A two line phone doesn't have to cost a fortune. Panasonic has the low cost answer for you. This unit has a convenient auto dialer, conference calling and much more!

$\$69^{95}$

MODEL
KX-T3110
#1505313

Panasonic

2-LINE SPEAKERPHONE W/ LCD DISPLAY

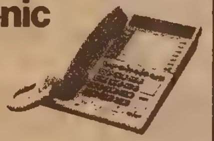
From Panasonic comes this fully featured 2-line speakerphone with LCD display, 3-way conference call, volume control for speaker and handset, 24-station one-touch dialer, auto redial, flash, separate ringer tone, line status indicator, memo dial, and save redial, all for only...

$\$89^{95}$

MODEL
KX-T3175
#1745122

AVAILABLE IN BLACK OR WHITE

Panasonic



3-LINE SPEAKERPHONE WITH LCD DISPLAY

From Panasonic comes this fully featured 3-line speakerphone with LCD display, 3-way conference call, volume control for speaker and handset, 48-station one-touch dialer, auto redial, flash, separate ringer tone, line status indicator, memo dial, and save redial, all for only...

$\$169^{99}$

MODEL
KX-T3185
#1768039

AVAILABLE IN BLACK OR WHITE

10 CHANNEL CORDLESS PHONES

Panasonic

10 CHANNEL AUTOSCAN CORDLESS PHONE

Panasonic's newest cordless phone comes equipped with a retractable flexible rubber antenna, sound charger technology, which helps filter out background noise resulting in enhanced sound quality, and 1-way paging between the base and handset. An excellent value at only...

$\$79^{95}$

MODEL
KX-T3850
#1764839

Panasonic

10 CHANNEL CORDLESS PHONE

W/ QUICK CHARGE & SECURE GUARD SYSTEM

Panasonic has developed the latest in cordless technology by incorporating a Quick Charge system that will enable you to recharge its battery in one hour providing 7-day standby or 3 hours providing 21-day standby! The Secure guard system can help keep your conversations private and help prevent eavesdropping scanners or baby monitors. Other features include one paging, 10 number memory, last number redial, flash, auto security code settings and much more for only...

$\$118^{95}$

MODEL
KX-T 3940
#1820915

AVAILABLE IN BLACK OR WHITE

Panasonic

10 CHANNEL AUTOSCAN CORDLESS DUAL KEYPAD SPEAKERPHONE

W/SECURE GUARD VOICE SCRAMBLING

Panasonic's comes equipped with secure guard which scrambles your voice when others try to listen in on your conversations with other cordless phones, radios or even scanners! Other features include quick charge technology enabling to fully charge the battery in only 3 hours for 21 day standby, 2-way paging, intercom, 10 number memory, high gain antenna, and much more. All for only...

$\$159^{95}$

MODEL
KX-T3965
#1886160

10 CHANNEL SPEAKERPHONES

Panasonic

10 CHANNEL CORDLESS PHONE

If you want the phone that has it all, come and see this one today! The hot new KX-T3910 from Panasonic is like having two phones in one! You can talk and dial from the base or talk back and forth thru the intercom. And it even has a 16 number Automatic dialer!

$\$117^{95}$

MODEL
KX-T3910
#1681244

Panasonic

10 CHANNEL CORDLESS SPEAKERPHONE

w/ANSWERING MACHINE

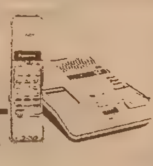
This cordless answering system with sound charger technology delivers sound so clear, you will hardly believe your ears! Some of the features included are, 2- way paging, intercom, auto security system, message alert, 2-way and memo recording just to name a few. Now only...

$\$149^{95}$

MODEL
KX-T 4330
#1796483

AVAILABLE IN BLACK OR WHITE

Panasonic



10 CHANNEL CORDLESS SPEAKERPHONE

w/DUAL MICROCASSETTE

This top of the line cordless dual microcassette answering system with sound charger technology delivers sound so clear, you will hardly believe your ears! Some of the features included are: 2-way paging, intercom, auto security system, message alert, 2-way and memo recording just to name a few. Now only...

$\$199^{95}$

MODEL
KX-T4400
#1735370

AVAILABLE IN BLACK OR WHITE

FAX MACHINES

Panasonic

FAX MACHINE

WITH ANSWERING MACHINE & ANTI-CURL

This fully featured Fax from Panasonic comes equipped with an auto-logic answering system and an anti-curl mechanism, as well as copier capabilities. It's the perfect secretary for your home or business!

$\$349$

MODEL
KX-F180
#1877490

Panasonic

FAX MACHINE

WITH PAPER CUTTER AND ANTI-CURL

This fully featured Fax from Panasonic comes equipped with an auto-logic answering system and auto paper cutter, as well as copier capabilities. It's the perfect secretary for your home or business!

$\$399$

MODEL
KX-F280
#1886159

Panasonic

PLAIN PAPER FAX MACHINE

WITH 20 PAGE MEMORY

The ultimate plain paper fax from Panasonic features a jumbo LCD display, 70 page paper cassette, adjustable letter/legal tray, 32 level halftones, polling, activity reporting, 20 page document feeder, broadcasting to 128 locations, fax transfer, enlargement and reduction copier functions, fax/tel switch, 28-station one-touch dialer, 100-station speed dialer, telephone directory with alpha-search, and much more! Now just.....

$\$997$

MODEL
KX-F3000
#1850626

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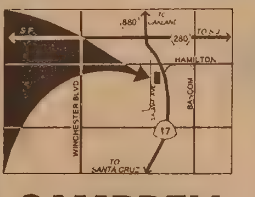

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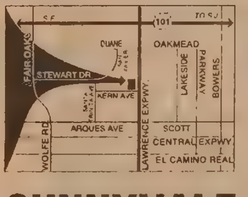

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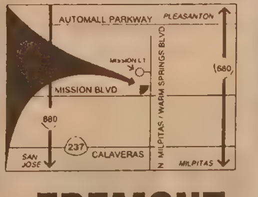

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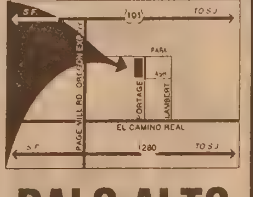

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GET ORGANIZED AT FRY'S ELECTRONICS

CASIO

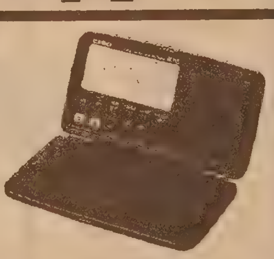
CASIO

32K DIGITAL DIARY

Why carry around a calendar and schedule book, or a telephone directory and notebook, when you can do it all and more with this digital diary from Casio.

$49.99

MODEL SF-4300
#1647189



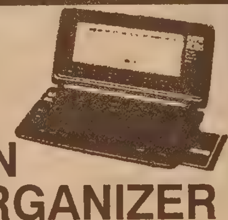
CASIO

B.O.S.S. WITH 64KB MEMORY

This business organizer scheduling system comes packed with powerful functions that are practical and easy to use. The QWERTY Keyboard, telephone directory, calendar, memo function, schedule alarm, world time function, home time function, and schedule keeper will prove to be an invaluable tool in keeping your busy days in order.
An excellent investment at...

$79.95

MODEL SF-5300
#1671137



CASIO

128K WIDE SCREEN BUSINESS ORGANIZER

WITH BUILT-IN SPREADSHEET

This executive B.O.S.S. incorporates a 40 character by 10 line screen, enabling you to take full advantage of the unit's built-in spreadsheet capability. Other convenient features include: Telephone directory, calendar, business card library, schedule keeper, world time, memo function, weekly schedule, free file function, schedule alarm and a to-do list, just to name a few. Now just....

$179.95

MODEL SF-R10
#1840047

SHARP

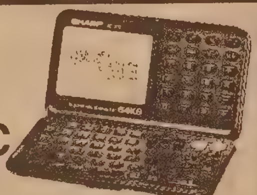
SHARP

PERSONAL ORGANIZER

Perfect for the business person on-the-go, this compact data bank incorporates a 14 x 3 line display, built-in calendar, schedule, phone/memo, memo pad, expense, clock, anniversary, and calendar functions as well as QWERTY keyboard to simplify data entry. Once you've used this electronic marvel, you won't leave your home or office without it!

$39.99

MODEL YO-100
#1800665



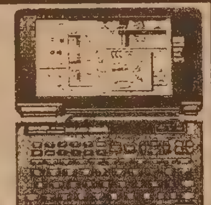
SHARP

32K ELECTRONIC ORGANIZER

The Sharp YO-300 is a pocket sized, personal information and time management tool that allows you to link it to a PC(with optional acc.). Keep a log of all upcoming projects and sort your list by priority. Track your business and personal expenses and summarize them by day or between days. It also stores birthdays, anniversaries and holiday and provides advance warning for these important events. Stores 1,680 names and numbers or 1,040 schedule appointments.(32K) all for the low price of...

$69.99

MODEL YO-300
#1804027



SHARP

512K PERSONAL ORGANIZER

w/TOUCH SCREEN TECHNOLOGY

This Sharp Wizard lets you leave your portable computer at home but puts the power of that computer in your pocket! Here's a small sampling of the innovative features. Touch screen technology which allows you to write or draw on the screen using the Wizard pen, filer which organizes related data into folders that can be transferred to another touch screen Wizard via infared, and a true word processer with a large screen display and a keyboard that's 75% the size of a standard PC keyboard. The possibilities are endless at only...

$379

MODEL OZ-9600 II
#1797152

PALMTOPS

PSION SERIES 3

POCKET SIZED 256KB COMPUTER

W/ BUILT-IN SPREADSHEETS

Psion has redefined the state-of-art in hand held computers with the new Series 3. It may be small, but this pocket-sized programmable computer comes equipped with features found in desktop machines plus powerful built-in software, including a full specification word processor and outliner that's compatible with Microsoft word. When using the Series 3 you will quickly learn from the system of graphic displays and option list how easy the Series 3 is to use. And with Psion's unique Multitasking Operating System, as many of the facilities as you want can be used at the same time! Other features include an automatic phone dialer, world information, a time and personal management file, powerful graphics programming language (OPL/w) which will enable you to write your own applications and two expansion ports for plug in SSD devices for unlimited memory and software.

$299

MODEL SERIES 3
#1763861

HEWLETT PACKARD
Authorized Dealer

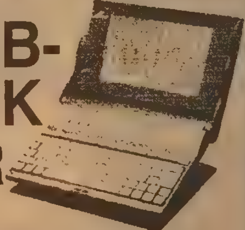
1MB PALMTOP COMPUTER

w/80 x 25 FULL SCREEN MS-DOS 5.0

The smallest, lightest HP PC ever comes equipped with complete organizer software to manage your time, tasks and data, plus you can retrieve information instantly with a full range of built-in personal productivity tools. The pull-down menus and dialogue boxes make it simple to master the familiar commands, and the high-resolution display with zoom option is easy to read ! With Lotus 1-2-3 built-in you will have full spreadsheet capability, including graphics and macros. Also includes CC:Mail built-in. Now only...

$449.99

MODEL HP-100LX
#1788150



1.9 lbs. SUB-NOTEBOOK COMPUTER

RUNS ON 4 AA BATTERIES UP TO 10 HOURS

2MB RAM • 2MB ROM • 2 PC MCIA Type II Slots
Fax/Modem Built-In • Serial/Parallel • 640 X 400 Resolution
Preloaded Software: DR DOS • Bitfax • LapLink XL • BitCom
DataSel Gold • Contact Manager
AA batteries not included.

By OMRON

$599.95

MODEL Toucan
#1809653

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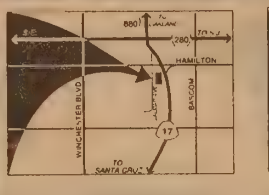

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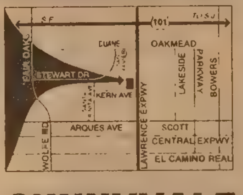

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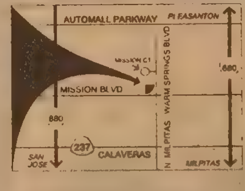

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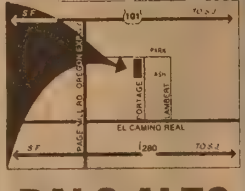

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ALL DIGITAL ANSWERING MACHINES

AT&T

ALL DIGITAL ANSWERING MACHINE

This AT&T answering system utilizes tapeless digital technology to ensure consistent recording quality over the life of the system. The convenience of new message playback, outgoing message bypass, remote system turn on or off and remote message recording makes this an excellent value at only...

$\$69^{95}$

MODEL 1710
#1853906

GENERAL ELECTRIC
GE We bring good things to life

ALL DIGITAL ANSWERING MACHINE
WITH THREE MAIL BOXES

With three mailboxes to choose from, members of the household can have messages stored for them in their own mailbox! The all digital capability eliminates the need for moving parts and allows for instant playback of incoming messages-no need to wait for a tape to rewind or fast forward! Other features include voice time/day stamp, two outgoing messages, digital counter, selective message erase and much more for only...

$\$89^{95}$

MODEL 2-9876
#1839261

SONY.

ALL DIGITAL ANSWERING MACHINE
W/ VARIABLE SPEED MESSAGE PLAYBACK

Sony has taken digital technology to a new dimension with this beautifully-designed, all digital answering system. The variable-speed message playback controller allows you to speed up (to 1.6 times speed) or slow down (to 0.7 speed) playback of messages without changing pitch. In addition, you can skip, repeat or backspace messages. The multi-function LCD display functions as a digital message counter, clock, call timer, answer mode indicator, and back-up battery strength indicator, while the voice time/day stamp automatically records the time of the message receipt after each message. Other features include: Voice-guided operation, Pre-recorded greeting, Announce-only mode, Memory usage guage, Audible message alert, Remote on/off, Auto interrupt, Memo recording, 2-way conversation recording, and Adjustable ring delay. An invaluable addition to any home or office at only...

$\$129^{95}$

MODEL
TAM-1000
#1803901

Panasonic

ALL DIGITAL 4 MAILBOX ANSWERING SYSTEM
W/SPEAKERPHONE & VOICE TIME/DAY STAMP

Panasonic's fully featured answering system comes equipped with 30 minute storage capacity, voice time/day stamp, speakerphone, voice menu, 4 personal mailboxes with security, lcd display, message scan, programmable alarm, message transfer, 2-way record, selective message delete, message skip/repeat, auto disconnect, auto redial, 10 number memory, and much more! An invaluable addition to any home or office at just...

$\$199^{95}$

MODELKX-T2880
#1841989

MULTI-LINE BUSINESS PHONES

BELL Phones
BY NORTHWESTERN BELL PHONES
A U S WEST COMPANY

TWO LINE PHONE

Perfect for the home office with multi-line needs, this 2-line phone from Northwestern Bell features line-in-use LEDs, 3-way conferencing, 15 number memory, hold, flash, pause, and ringer controls. An excellent value at...

$\$39^{99}$

MODEL
Easytouch 2202
#1890905

AT&T

TWO-LINE PHONE

Get outstanding AT&T quality in a two-line phone now for less! This unit has 3-way conference calling, automatic dialing and much more.

$\$59^{95}$

MODEL 712
#1548422

Southwestern Bell Freedom Phone

THREE LINE SPEAKERPHONE

Convenient is the only word to describe this 3-line speakerphone. With call waiting, intercom paging, 16 number memory, last number redial, and conferencing, this phone is an incredible value at only...

$\$159^{95}$

MODEL FT-38
#1668348

Panasonic

THREE LINE SPEAKERPHONE
WITH LCD DISPLAY

From Panasonic comes this fully featured 3-line speakerphone with LCD display, 3-way conference call, volume control for speaker and handset, 48-station one-touch dialer, auto redial, flash, separate ringer tone, line status indicator, memo dial, and save redial, all for only...

$\$169^{95}$

MODEL KX-T3185
#1768039

COPIERS

SHARP

PORTABLE COPIER

This Sharp copier weighs in at just 14.8 lbs. and is amazingly compact and lightweight, making it easy to be carried or stored in a small place. Features include auto exposure control, auto start function, auto power shut-off mode, which completely cuts the power approx. 90 sec. after you finished copying. An excellent value at only.....

$\$299$

MODEL Z-20
#1885620

Canon

COMPACT COPIER

The size of Canon's compact personal copier makes it perfect for the home or office where space is at a premium. Some of the convenient features of this model includes the ability to copy on both sides of copy sheets, exposure control, and more. Now just...

$\$399$

MODEL PC-310
#1849208

XEROX

LETTER /LEGAL COPIER

Don't settle for a copy when you can have the original... Xerox. Xerox is so confident in the quality and reliability of its copiers that it offers an exclusive 3 year warranty on all its copiers. This model offers a paper tray that stacks 40 sheets, a built-in carrying handle and removable storable paper trays, multi-copy capability which can be set from 1 to 9 copies or "C" for continuous up to 20 copies, and automatic exposure which scans documents for degrees of lightness or darkness to determining the appropriate exposure setting. An invaluable addition to any home office. At only...

$\$497$

MODEL 5222
#1886425

SHARP

LETTER/ LEGAL COPIER
WITH STATIONARY PLATEN

This durable Sharp copier utilizes a stationary platen, a space-saving feature that eliminates the possibility of the copier bumping into objects while in operation. The variable zoom ratio setting adjusts between 70% and 124% in 1% increments giving you more copying flexibility and versatility. Other features include large capacity 250 sheet tray, continuous copy (up to max. 50), auto start, and letter/legal capacity. An excellent value at...

$\$699$

MODEL Z-85
#1903780

FAX MACHINES

COMPACT FAX MACHINE

This unbelievable value comes equipped with a telephone answering machine interface, 10 number speed dialing, last number memory, polling, on-hook dialing, and remote operation (extension phone transfer to fax) all for only...

$\$198^{99}$

MODEL FX-40
#1820524

SHARP

FAX MACHINE
WITH PAPER CUTTER & ALL DIGITAL ANSWERING MACHINE

Sharp's unique time and paper-saving functions offer several compressions methods to minimize time and paper consumption. The effective size of outgoing documents can be reduced by 20% for faster transmission. And for incoming faxes, it can be set to ignore unprinted areas or reduce documents by 50%. Other features include 50 number memory, 10 page document feeder 16-level halftone, and much more, all for only....

$\$399$

MODEL UX-254
#1892848

brother

FACSIMILE MESSAGE CENTER
WITH AUTO PAPER CUTTER

The Facsmile Message Center was designed so that the internal memory can be used for out of paper reception (up to 50 pages), as an all digital answering machine (up to 12 minutes), or you can share the memory on a first come first serve basis! Other features include 15 page auto document feeder, 32 level grayscale, 16 digit LCD display, sequential broadcasting, multi-copying with sorting, 60 station memory, Fax/Tel switch, Multiple resolution transmission, and much more for only...

$\$478$

MODEL FAX-780
#1796944

HEWLETT PACKARD
Authorized Dealer

PLAIN PAPER FAX MACHINE
W/256 KBYTES OF MEMORY

This plain paper fax offers 256 Kbytes of memory, a 20 page document feeder, 32 gray scale levels, 100 page capacity with easy front reloading, 12 page memory, plus many more outstanding features for only...

$\$798$

MODEL
HP-FAX900
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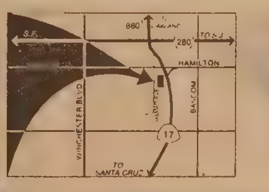

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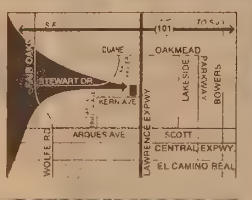

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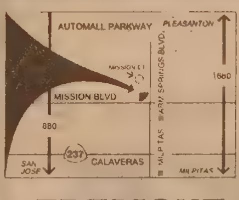

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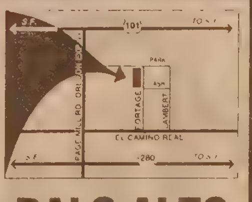

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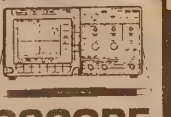
Tektronix



100MHz DIGITAL STORAGE OSCILLOSCOPE

With the introduction of the TDS 320, Tektronix redefines the low-cost digital oscilloscope. By sampling the signal at five times the analog bandwidth (500 mega samples per second on both channels simultaneously), you can be assured of true acquisitions, free from aliasing or other digital sampling effects. TDS 320 is the only scope in its class that can reliably acquire high speed transient or single-shot events to its full bandwidth. The TDS 320 has Dot, Dot Accumulate, Vector, and Vector Accumulate display modes—another advantage over the competiton.

$2895

TDS 320
#1878446

Tektronix

100MHz ANALOG 2 CHANNEL OSCILLOSCOPE

THE TAS 465 brings an advanced level of power and reliability to general purpose scopes. It brings leading edge innovation to low-cost analog scopes with comprehensive features. Comprehensive Video Triggering simplifies triggering on complex video waveforms. With line or field (odd, even, or both) composite video selections and positive or negative sync, you can cleanly trigger on any NTSC, PAL, or SECAM video signal. The scopes' dual time base lets you zoom in on any portion of a waveform for closer examination. Auto Setup instantly delivers meaningful waveforms. Pressing the AUTOSET button automatically adjusts the horizontal, vertical, and triggering controls so that a stable signal is displayed.

$1995

TAS 465
#1823505

HITACHI

20Mhz DIGITAL STORAGE OSCILLOSCOPE

Waveform observation has become an essential part of virtually every phase of a product's life. To solve the problems associated with such waveform analysis, Hitachi has provided an enhanced real time storage Oscilliscope series. 20ms/s sampling • 20Mhz Real time repetitive signal storage bandwidth • Cursors Plus much more

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V-6023
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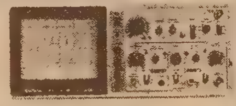


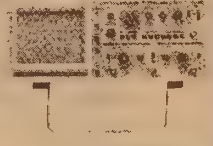
50Mhz OSCILLOSCOPE

With Single Time Base & High Resolution CRT. The usefullness of Hitachi scopes is extended to cover an array of new measurement applications.
2 channel • 6 inch screen
3 Year Warrenty.

$995

V-522
#1746248

GoldStar



20MHz SCOPE W/BUILT-IN FUNCTION GENERATOR

1MHz Function Generator with three kinds of waveforms are available w/50ohm output and TTL Pulse. Two channels- single time base. Ideal for education applications. 1MHz fuction generator built-in this 20MHz, two channel scope. Sine, Square, Triangle and TTL Pulse output waveforms.

$469

OS-9020G
#1734771

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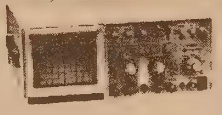
20MHz OSCILLOSCOPE

This lightweight, slim-line scope has become the standard of high performance. Hitachi scopes have earned acclaim from field-serving and maintenance personnel worldwide. 2 Channel, Single Time Base, 3 Year Warranty

$419

Model V-212
#1746237

BK PRECISION
MAXTEC INTERNATIONAL CORP.



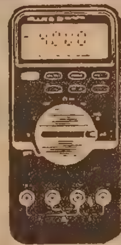
20MHz DUAL-TRACE OSCILLOSCOPE

Dual or Single Trace Operation+1mV/DIV Sensitivity
20MHz Response at a true 3DB
Auto/Norm triggered sweep operation with AC TVH TVV and the coupling
x10 magnifier • Bright, sharp rectangular CRT with P3331 phosphor X-Y operation

$389

BK-2120
#155365

FLUKE 87 4.5 DIGIT TRUE RMS DIGITAL MULTIMETER



19,999 Count high resolution mode, plus 1ms Peak Min/Max Hold.

- Min/Max/Average recording mode w/Min/Max alert
- Frequency, Duty Cycle, and Cap Measurements
- Back-lit display, touch hold, relative modes
- Protective Holster with Flex stand
- Made in USA
- 3 Year Warranty

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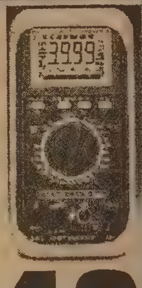
#1440238

THE CHIEF ENGINEER ULTIMATE METER TRUE Rms - LCR-Hz - dBm 12 INSTRUMENTS IN ONE



- DC Volt Meter
- AC Volt Meter
- Ohm Meter
- DC Current
- AC current
- Diode Tester
- Audible Continuity Tester
- Frequency Counter 20MHz
- Capatance Meter
- Inductance Meter
- Logic Probe
- dBm

IOMEGA Ohm Impedence • Relative mode
Data hold • Min/Max Average Memory Record
True Rms • Auto sleep • Power off
2 Year warranty
Model 104
#1776719

S.M.S.

$249

BK PRECISION
MAXTEC INTERNATIONAL CORP.

2 MHz FUNCTION GENERATOR WITH DIGITAL DISPLAY

- Generates sine, triangle, square, pulse and ramp waveforms
- TTL Pulse and CMOS Pulse outputs
- Coarse and Fine Frequency Controls
- Variable amplitude output, plus 20dB step attenuator
- Four digit frequency counter display
- Variable DC offset, with on-off switch
- Variable duty cycle; CAL position for 50% duty cycle

$249

MODEL
3011B
#1460267

GoldStar

DC POWER SUPPLY

0-30 volts @ 3 amps Continuously Variable. Rugged Construction with Constant Current and Constant Voltage Operation. Overload protection circuit. Output Polarity: Positive and Negative. Low Ripple Voltage Less Than 2mV p-p.

$209

GP-303
#1864678

AMERICAN RELIANCE INC.

3.5 DIGIT DIGITAL MULTIMETER

W/AUTORANGING & 1 YEAR WARRANTY

Model 33 is a versatile digital multimeter with an impressive range of capabilities offered at an incredible price. This unit has data-hold functions and a basic accuracy of 0.5%, also audible continuity and fused 20A input.

FREE BOOT W/PURCHASE #1744648

$59.95

Model 33
#1742347

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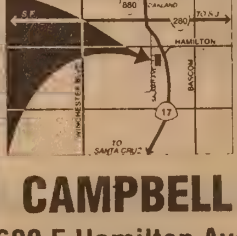

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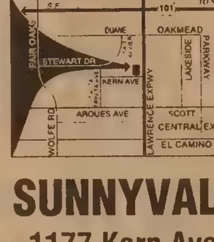

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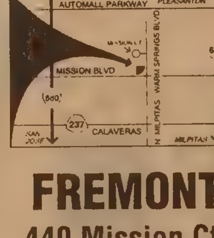

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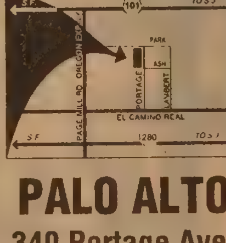

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BLOOD PRESSURE AND PULSE MONITOR WITH COMPUTER INTERFACE

Non-invasive blood pressure/pulse rate monitoring and recording system and accessories.
200M
#1755848 IBM
#1866865 MAC

$99⁹⁹

METRO DATA-VAC

HI-TECH OFFICE EQUIPMENT MAINTENANCE

- Lightweight, portable- goes wherever needed.
- Vacuum or power blow.
- Attachments include 19" flexible hose, crevice tool air "pin pointer", soft bristle dust brush, shoulder strap and 5 disposable bags.
- Unit measures 4" in diameter; 16" long.

$48⁹⁹

MDV-IC
#1517352

platt

TROUBLE SHOOTER TOOL CASE

Black cordura with two exterior meter pockets and one document pocket. Interior has 29 sewn tool pockets and one meter pouch.
13" x 10" x 2". 660ZT-BLK #1790199

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DELUXE COMPUTER SERVICE KIT W/SOLDERING IRON

Contains chip inserter, extractor, crimping/cutting/stripping tool, spare parts tube, wrench, pliers, assorted screwdrivers, soldering iron, soldering tools, heat sink, desoldering pump, torx screwdrivers in a zippered vinyl carrying case.

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CONTACT CLEANER

Use to clean and remove dirt from electrical/electronic components, circuit boards, switches, timers and motors. Evaporates quickly without oxidizing or leaving a cross-circuiting residue. High dielectric strength.
AP-415 #1874970

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KLEAR SCREEN COMPUTER SCREEN CLEANER

First product designed to clean delicate LCD displays.
- Non-toxic
- Alcohol free
- Ammonia free

#1743500

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HAKKO 926 SOLDERING STATION

- Super quick heat-up coupled with faster thermal recovery, permits high quality soldering at lower tip temperature
- Built-in ceramic heater sensor maintains temperature with (±0.5°C ±0.9°F) of the setting
- Soldering iron handle is heat-insulated for operator comfort

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13" TOOL BOX

- Lift-Out Tray
- Full-Interlocking Hinges
- Fold-Down Recessed Handle
- 13"W x 7"D x 6"H

AKRO-MILS

$4⁹⁹

Model 09-013
#1843682

APPLETALK NETWORK KIT

Provides capability of building a standard appletalk network for your MAC

$11⁹⁹

Model MF-037
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NEW MAC CABLE

Attention Macintosh Users!The Intellisoft's Intelliview Adapter Connects A Variety of Monitors To The On-Board Video Of Apple's Latest Macs.

- Works with hundreds of inexpensive PC multi-frequency monitors to mimic all of Apple's monitors up to 21" at 1152 x 870.
- Allows easy switching between various resolutions to suit changing needs.

4691V #1800584

$27⁹⁹

MicroApps PERMANENT POWER PACK™

PREVENT PC FAILURE DUE TO A DEAD BATTERY. Your PC will fail to boot up unless it contains the Patented Permanent Power Pack from MicroApps. Virtually all other PCs have a dying battery which causes real time Clock Failure and Loss of the System Configuration File. Thus, your PC will unpredictably fail to boot every few years. The lifetime guaranteed Permanent Power Pack eliminates the clock battery in IBM PC/AT and most compatibles. Never replace your PC battery again. IC controlled power management system makes your PC more reliable and carries a lifetime warranty.

$32⁹⁵

Model PPP-001
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PCUBID
Computer Technology, Incorporated

486 CPU KOOLER

A high quality heatsink and fan combined to cool your Intel 486 CPU. Many inferior versions are out there, but don't be fooled. Come see the PCubid version and you will see why this is the choice of engineers. Easy to attach with thermal adhesive (supplied)

$39⁹⁵

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REUSABLE ALKALINE™

NEW

INTRODUCING THE BEST PERFORMING BATTERY SYSTEM IN ALL OF CREATION!

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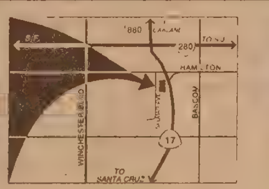

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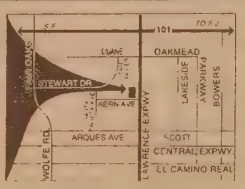

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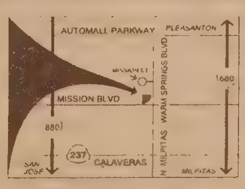

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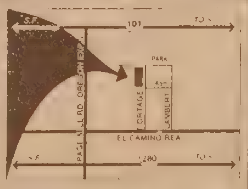

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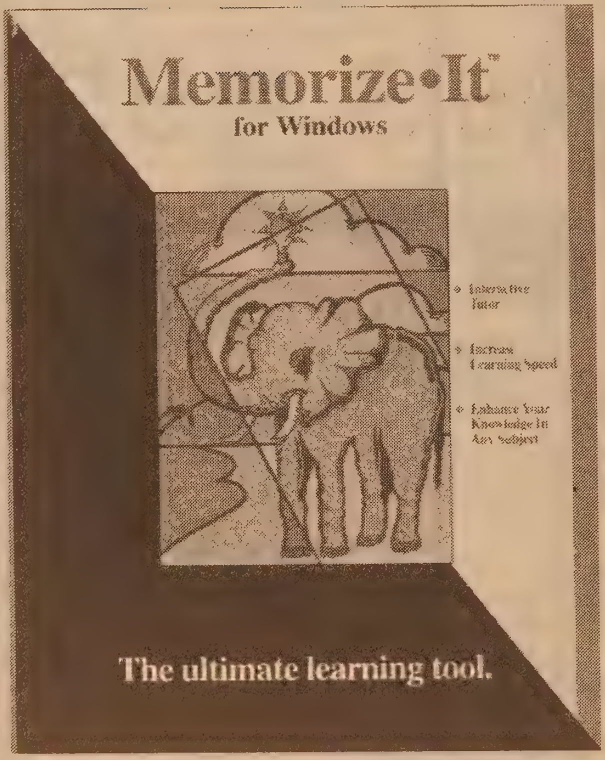
Memorize•It™
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Interactive Tutor
Increase Learning Speed
Enhance Your Knowledge In Any Subject
The ultimate learning tool.

Memorize•It is a multimedia flashcard application that allows you to create your own stacks of flashcards incorporating text, sound, pictures, drawings, and even video. Using several testing methods—multiple choice, true/false, honor system—it can be used for any subject from preschool to medical school. Cards can be easily moved between stacks or copied to build a new stack. They can be printed front and back on four styles of Avery card stock paper. Memorize•It runs on Windows 3.1; a Macintosh version is also available. Side Eight offers picture scanning and stack creation for specialized topics. ($49) Side Eight, Inc., PO Box 5004, Garden Grove, CA 92645-5004. (714)952-4114.

XEROX TEXTBRIDGE 2.0 FOR WINDOWS

TextBridge 2.0 for Windows, featuring OCR technology codeveloped with Xerox PARC, works with scanners and fax modems to provide users with a powerful solution for integrating paper-based information—including faxes and other degraded documents—into Windows applications. New features include an Application Server, which seamlessly integrates TextBridge into word processing, email, or spreadsheet applications on the file menu, allowing access to OCR technology from other Windows applications; OCR Print Driver that sends page images directly from fax modems and printing applications to TextBridge; a Word Verifier that allows users to view, confirm, and correct words while recognition is in process; and Multiple TIFF File Processing to quickly process large batches of TIFF files as a single document and handle

UPDATES

- ACI released **4D Insider 2.0**, an upgrade to its development tool for **4th Dimension.** 4D Insider, an information cross-referencing tool, provides a complete visual dictionary of 4th Dimension databases. ACI US, Inc., 20883 Stevens Creek Blvd., Cupertino, CA 95014. (408)252-4444. AppleLink D4444.

- **Aldus Corp.** introduced **Persuasion 3.0 for the Macintosh**, a major upgrade to its cross-platform software application for creating and managing slides, overheads, and computer-based on-screen presentations. Registered users of Persuasion 2.12 or earlier can obtain an upgrade for $150. Aldus Customer Services, 1-800-685-3617.

- **Caere** released **OmniPage Professional 5.0**, a new generation of its optical character recognition software for Windows. Upgrade prices for current users of OmniPage Professional, OmniPage, or OmniPage Direct to OmniPage Professional 5.0 are $129, $179, and $299, respectively. Caere Corp., 100 Cooper Court, Los Gatos, CA 95030. 1-800-535-SCAN.

- **Digital Tools** released **AutoPLAN II v2.0**, the latest release of its project management software specifically designed for the UNIX platform. Version 2.0 is presently available on Sun SPARC and HP 9000/Series 700/800, and will soon be ported to other platforms. Digital Tools, Inc., 18900 Stevens Creek Blvd., Cupertino, CA 95014. (408)366-6920. Email: info@digit.com.

- **Island Graphics** announced the release of **IslandTrapper 2.0**, which streamlines pre-press workflow by enabling batch trapping input from other sources, the first of which is QuarkXPress. Island Graphics Corp., 4000 Civic Center Dr., San Rafael, CA 94903. (415)491-1000.

- **Software Solutions** released **Territory Manager 1.5**, its Macintosh software product for the outside sales rep. Software Solutions, Inc., 6404 E. Oak St., Evansville, IN 47715. (812)477-3181.

- **SuperMac Technology** announced a huge step forward with its new **ProofPositive 2.0** dye sublimation printer. SuperMac Technology, Inc., 215 Moffett Dr., Sunnyvale, CA 94089. (408)541-6100.

- **WordPerfect** announced **WordPerfect 5.1+ for DOS**, an upgrade to WordPerfect 5.1 for DOS targeted at users of lower-end PCs who want new functionality but do not have the hardware required to run the latest versions of other word processors. The company also announced it would lower the upgrade price to $49.95. WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057. (801)225-5000.

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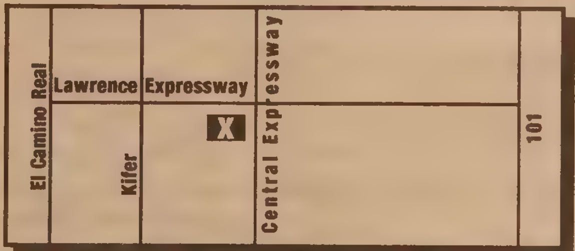

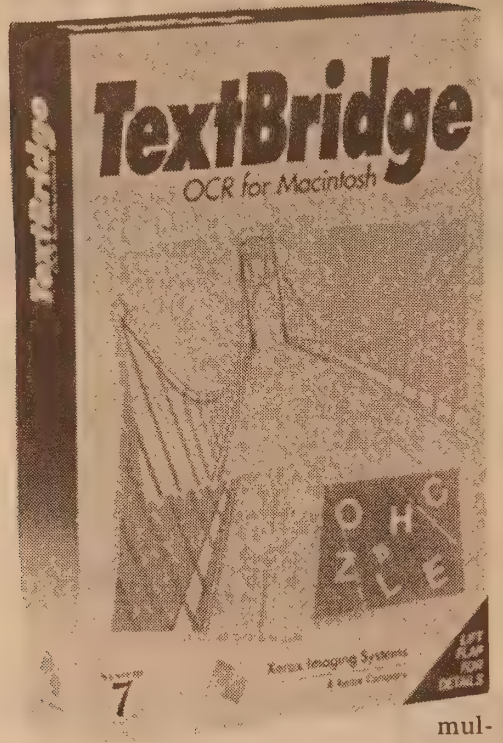

multiple-page TIFF files received from fax applications. ($99) Xerox Imaging Systems, Inc., 9 Centennial Dr., Peabody, MA 01960. (508)977-2000.

PERFECTWEDDING

PerfectWedding for Windows is designed for planning special events—both personal and professional—not just weddings. Using colorful, easy-to-recognize icons, the user can access guest lists, invitations and RSVPs, gifts and thank yous, attire, travel and lodging, budget, services, appointment calendar, gift registry, a graphical seating chart, and a word processor. Its reporting features let you easily answer questions such as: Who has not yet RSVP'd? Who are the out of town guests? Who hasn't been sent "thank you" notes yet? ($49.95) Topper Technologies, Inc., PO Box 5898, 850 N. Lake Blvd. 19A, Tahoe City, CA 96145. (916)581-5500.

PC Hardware

MICRO COMPUTER TWINFACE

Designed to meet the needs of presentation, CAD/CAM, publishing, and graphic design professionals, Twinface enables simultaneous use of dual monitors with a single PC. Combined with the microCrystal display interfaces, Twinface operates two displays in tandem as a single Windows desktop. Users can adjust the resolution of each display independently to accommodate the need to display different images and applications simultaneously. (Suggested list price for the Twinface Basic Bundle with one microCrystal 8S and one microCrystal 16Si is $599; the Power Bundle with two microCrystal 16Si display interfaces is $749; the Masterpiece Bundle includes two microCrystal 32S display interfaces and Altimira Composer for $1699) micro Computer Products, Inc., 1-800-249-MIRO.

ALARIS ENERGYSMARTPC

The new EnergySmartPC line of low-cost, Energy Star-compliant PCs features the clock-doubled IBM 486 SLC2 microprocessor, integrated VESA Local Bus Windows accelerator, and integrated VL-bus IDE controller for exceptional overall system performance. A key component of this system is Alaris's EnergySmart power management software, which enables the system to operate as low as 28W during active use and at 25W during sleep cycles. Each system includes a 50 or 66MHz IBM 486 SLC2 CPU, on-board floating point unit, 4MB of RAM, one parallel and two serial ports, one 3.5" floppy disk drive, 101-key extended keyboard, MS-DOS 6.2, and Windows for Workgroups 3.11. (EnergySmartPC SLC2 50 carries a suggested list price of $945) Alaris, Inc., 46704 Fremont Blvd., Fremont, CA 94538. (510)770-5700.

REVIEWS

Game Reviews

DARKSUN: SHATTERED LANDS

Publisher: Strategic Simulations, Inc.
For: IBM 386, 2MB of RAM, VGA, Adlib/SoundBlaster/Roland/ProAudio Spectrum
List Price: $55.73
Reviewed By: Fred Haslam

Darksun is a grand role-playing game from SSI using the AD&D game system. While I am not partial to the Dungeons and Dragons RPG, I have to admit that Darksun has created a fascinating and consistent world and does a brilliant job of rewarding the player for role-playing.

The adventure begins with the players fighting to death in an arena, plotting with the other gladiators to escape. There are at least four methods of escape available. One method completely avoids bloodshed and earns the players a huge experience award. This event warmed my heart immediately to Darksun. The player then travels the world, righting wrongs and making friends until the final showdown with an evil despot. I call this adventure on a grand scale.

The interface takes some getting used to, especially learning how to utilize equipment and spells. Darksun uses the full screen to portray a top-down view of the adventure party in 256-color graphics. The artwork is quite good as is the background music. The animation and sound effects are top rate.

Darksun is a tremendous role-playing game. While the world itself is smaller than most, the adventures more than compensate by being detailed and imaginative. The game also possesses a fair number of "mini-quests"—small adventures like carrying healing herbs to a distant priest. This game is both rewarding and entertaining. (Strategic Simulations, Inc., 675 Almanor Ave., Suite 201, Sunnyvale, CA 94086-2901. 408/737-6800)

THE LABYRINTH OF TIME

Published By: Electronic Arts
List Price: $59.95
Reviewed By: Woody Liswood

The Labyrinth of Time, a DOS-based, CD-ROM game, is addictive, presenting some of the best graphics I've seen. On the other hand, the story line is marginal to nonexistent, the use of multimedia is poor to really bad, and the solution is absurd and not intuitive. But, to be honest, I kept at it until I solved the puzzle. I decided that I wasn't going to let the designers of this game get the better of me. At the end of the game is an advertisement for the next game in the series and I will probably try it as well.

The entire game is played with the mouse. You must find your way through a variety of puzzles which take place in different times and places. You can move forward and turn right or left. A single mouse click shows you a map of the places you've visited, so far. You will refer to this map continuously, since you will not remember the way through the various built-in mazes that keep reappearing. One of the mazes doesn't have a map, but after a few attempts you will find your way with ease.

The graphics are interesting and make up much of the game. As in all of these type of adventures, you must study and examine the screen carefully, since it is somewhat easy to miss a clue. If you get stuck in the game and want a clue, you can send me

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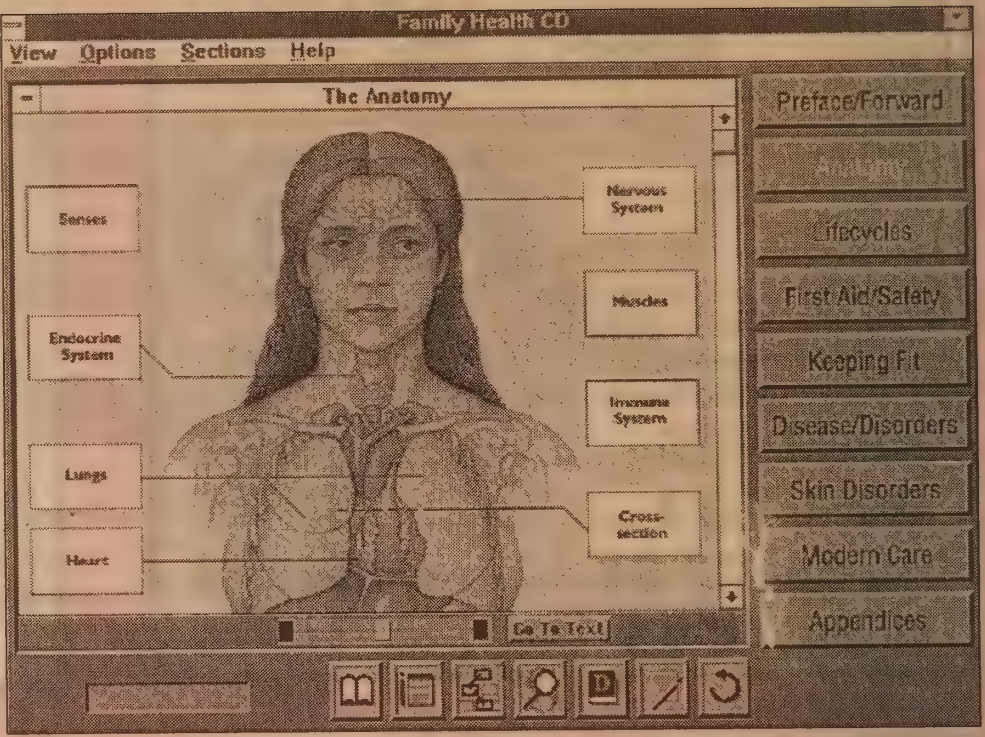
email (woody@well.sf.ca.us) and I would be pleased to point you in the best direction.

I had trouble with this game in a Laser Magnetics double-speed CD-ROM drive with a proprietary Philips CD-ROM interface. It would crash, go slow, and generally cause problems. I talked with the CD-ROM drive folks and they blamed Electronic Arts. I talked with Electronic Arts and they said that sometimes a CD-ROM product just won't work with a particular brand of drive. This seems to fit, given that everything worked fine in several other CD-ROM drives that I tested this game with.

The Labyrinth of Time is a good adventure to play with your kids. (Electronic Arts, Inc., PO Box 7578, San Mateo, CA 94403-7578. 415/572-ARTS)



CD-ROM Reviews

TURBOTAX DELUXE CD-ROM EDITION FOR WINDOWS

Published By: Chipsoft
List Price: $60
Reviewed By: Woody Liswood

February probably wasn't the best time to introduce a new tax product, but if you are running a Multimedia PC with CD-ROM, this new version of Turbo Tax for Windows contains more information than you might imagine bundled on a single disk.

The normal TurboTax program is here. This version is identical, as near as I can tell, to the floppy disk-based product.

The CD-ROM includes Marshall Loeb's *Video Tax Guide.* If you have a question, Loeb appears in a video window, presenting a short lecture about your inquiry. The advice, as you might expect, is rather general and may not apply to your specific situation. But, hey, this is easier than reading a book offering the same thing.

A version of J.K. Lasser's popular *Your Income Tax* books are also included. In them you will probably find the more specific answer to your tax questions.

The CD-ROM also contains the early versions of the state tax information. There is a reply card for getting the final version for your state. I sent my card in and received the disks back within eight working days.

The TurboTax Tax Planner lets you play "what if" with your tax strategies and look up to five years into the future. For example, you can look at the difference between filing individually or jointly, assuming you have that choice.

There is also a TurboTax Tax Savings Guide that gives tips which may help you save some of your hard-earned money.

Lastly, if you are into federal government instructions, you can get, on-screen, the specific IRS instructions for every topic and the appropriate forms.

Chipsoft has taken a major step in the CD-ROM direction with this product and I expect it will get even better in the years ahead. Now, if it would only do my taxes for me. (Chipsoft, Inc., 6330 Nancy Ridge Dr., Suite 103, San Diego, CA 92121-3290. 1-800-756-1040)

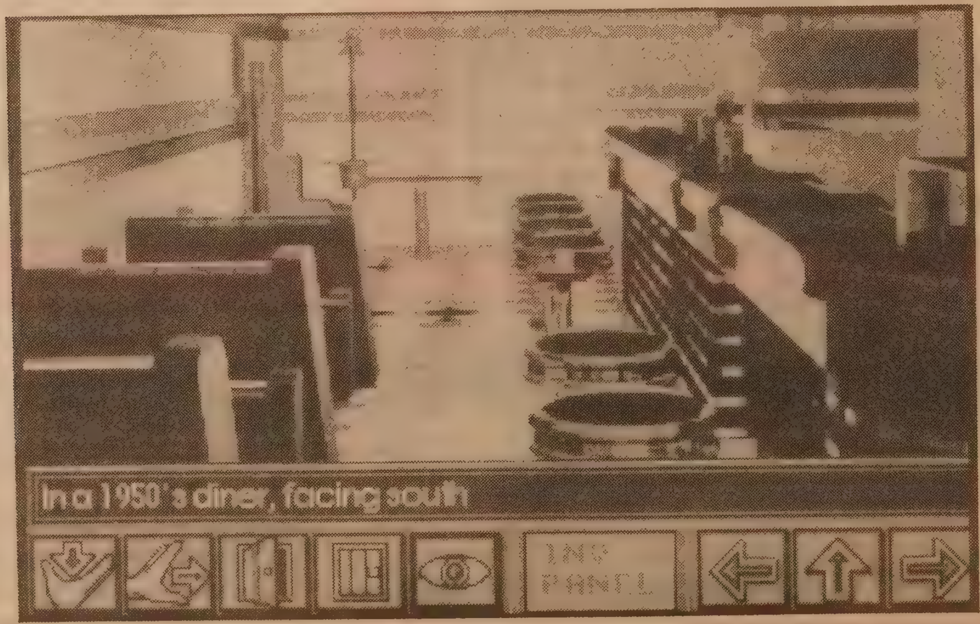
QUICKEN FOR WINDOWS CD-ROM DELUXE EDITION

Published By: Intuit
List Price: $124.95
Reviewed By: Woody Liswood

Quicken is known for being the best-selling personal finance program and Quicken for Windows CD-ROM Deluxe Edition will probably keep that reputation intact.

In addition to the standard Windows version of Quicken, the CD-ROM includes Quicken Companion, comprised of Quicken Home Inventory, Quicken Tax Estimator, Quicken Tips, and Quicken Quotes.

If you don't already have Home Inventory, it is something you will want to use immediately. It lets you build, step by step, a complete inventory of everything you own. When you finish, save


In a 1950's diner, facing south

Top right: Mayo Clinic Family Health Book CD-ROM brings this anatomy lesson to life with animation and sound. Right: One of the many adventures of The Labyrinth of Time.

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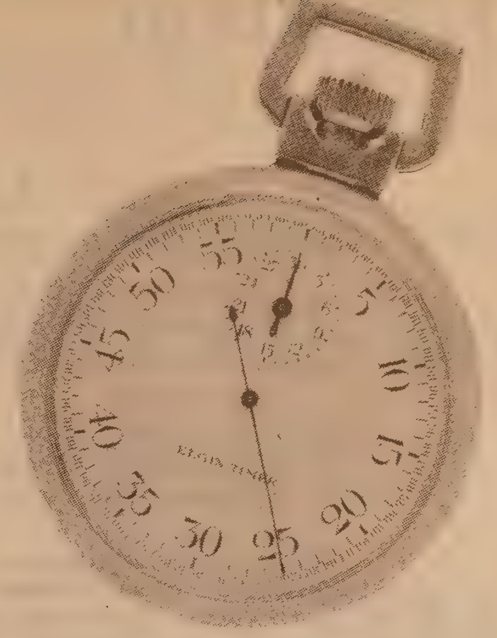
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everything on a floppy, and put it in a safe deposit box. If misfortune strikes, you will have a record of all the information you will need to handle your insurance nightmares.

The CD-ROM also contains the Tradeline Electronic Stock Guide. If you like tracking and charting information on six thousand stocks over the past twelve months, pegged to 130 stock market indicators, this is for you. Updates are available on a monthly and quarterly basis.

There is a variety of US Government publications dealing with small business and personal finance, including information about the Fair Credit Reporting Act; Consumer Handbook to Credit Protection; A Guide to Business Credit for Women, Minorities, and Small Businesses; Starting and Managing a Business From Your Home; A Retirement Guide: Defined Contributions Plans; and more.

You will also find *The Wall Street Journal Video Guide to Money and Markets.* I had fun, here, fooling with the video, and looking and listening rather than staring and reading. (Intuit, Inc., 66 Willow Place, PO Box 3014, Menlo Park, CA 94026-3014)

MAYO CLINIC FAMILY HEALTH BOOK—INTERACTIVE EDITION

Published By: Interactive Ventures
List Price: $99.95
For: Macintosh
Reviewed by: Matthew Leeds

With an excellent pedigree (Mayo Clinic for source material, Sony Electronic Publishing for distribution, Clement Mok for interface design), Interactive Ventures' first Macintosh title has a lot to live up to. Converted from the 1378-page book, this CD-based product contains all the text material of the book plus forty-five animated illustrations, five hundred color stills, ninety minutes of audio, hyperlinks, and full text search capabilities.

Designed as an easy-to-use family reference, the Mayo Clinic Interactive CD covers first aid, exercise and fitness, pregnancy, newborn and infant care, nutrition and health, heart disease, cancer, special problems of the elderly, and infectious diseases. The interface is a classic outline form with hypertext links. The great strength of this CD is in the depth of material as well as the interface access to that material.

For example, there is a section of the CD where you can interactively explore the human body, working through the layers of anatomy while gaining information on the physiology of the body. The Family Health Book is the first in a series of health and medical CDs planned by Interactive Ventures. This is one of the few reference CDs I've found usable as well as useful. (Interactive Ventures, 1380 Corporate Center Curve, #305, Eagan, MN 55121)

3-D DINOSAUR

Published By: Knowledge Adventure
List Price: $79.95, CD-ROM; $59.95, floppy disk
Reviewed By: Woody Liswood

3-D Dinosaur, from Knowledge Adventure,

Continued on page 260

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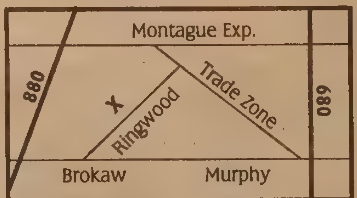

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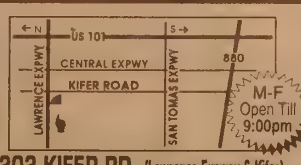

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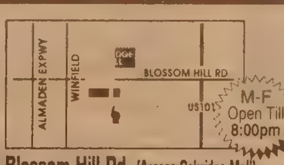

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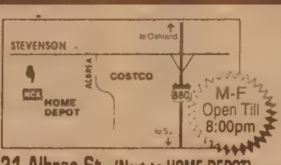

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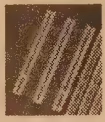

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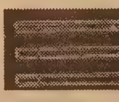

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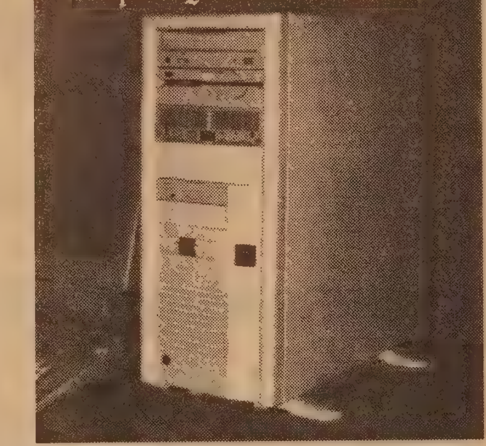

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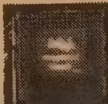

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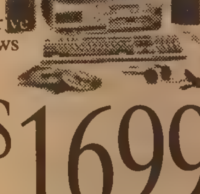

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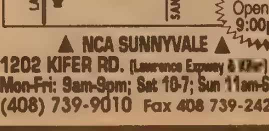

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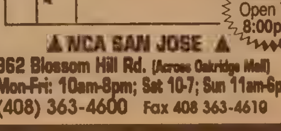

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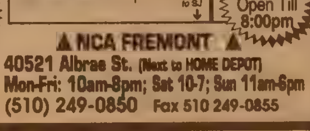

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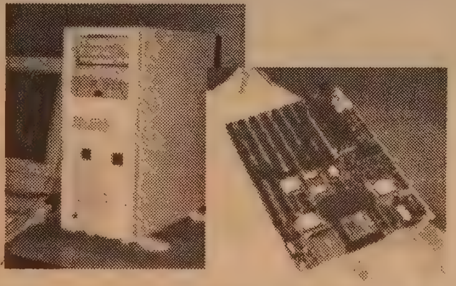

- Seven EISA Bus Slot
- Two VESA Local Bus Slots
- ZIF Expansion Slots
- High speed Serial Ports UARTs
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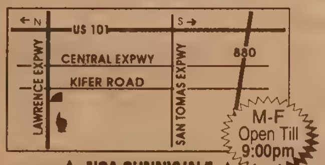

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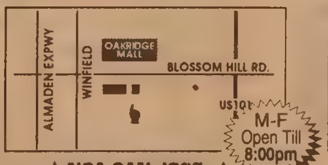

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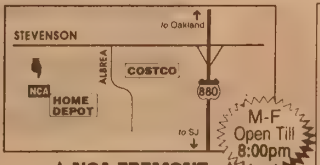

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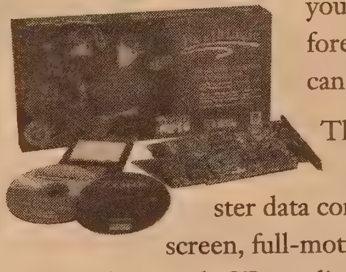

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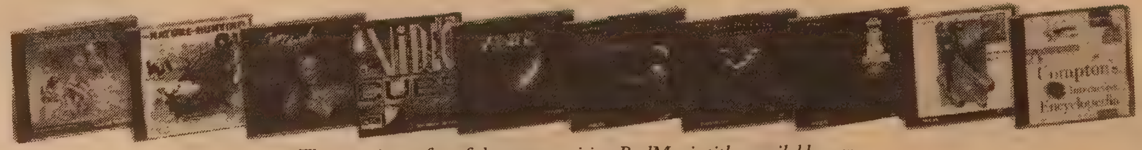

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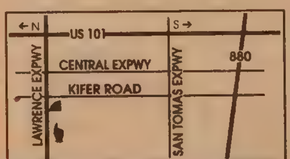

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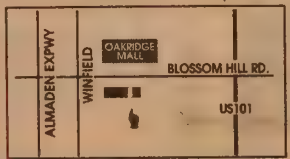

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So you're not supposed to get good repro quality from a desktop scanner...

The AVÉC 2400dpi Photo was scanned using the Avéc 2400 at 400dpi, at 100lpi set in Photoshop, and saved in CMYK in EPS File Format.

We 'd like to introduce to you The AVÉC 2400 Flatbed Color Scanner

- **High resolution up to 2400dpi by interpolation (True 600X300)**
- **16.8 million colors & 256 grayscale levels**
- **ColdScan technology**
- **Maximum Scanning area 8.5"X14"**
- **Lamp life expectancy up to 35,000 hours**
- **SCSI-2 interface for Windows and Macintosh environments**
- **Twain compatible**
- **Optional 50-page Auto Document Feeder (RELI ADF30)**
- **One-Year Warranty and HOT-LINE technical support in the U.S.**

AVÉC *Colour*

2400

NEW COLDSCAN TECHNOLOGY

AVÉC Colour Office 2400 conveniently brings automation to the office environment. Ideally it functions as a document manager, OCR and Image file support. Utilizing the ColdScan technology, the cold cathode lamps are on during the scanning process only. And, since the bulbs do not require ventilation, the chassis is completely encapsulated to produce dust-free scanned images.

Baby Alex's Photo was scanned using the Avéc 2400 Flatbed color scanner on a Macintosh, at a resolution of 300dpi and saved in CMYK TIFF Format.

Flatbed Color Scanner for PC

WINDOWS PACKAGE INCLUDES:

- AVÉC Colour Office 2400 Scanner
- Avéc Colour Office 2400 Scanner
- Caere's OmniScan™
- TWAIN Driver
- SCSI Cable & Terminator
- Power Cord

Flatbed Color Scanner for MAC

MACINTOSH PACKAGE INCLUDES:

- AVÉC Colour Office 2400 Scanner
- Adobe's Photoshop™ LE
- Art-Scan
- SCSI Cable & Terminator
- Power Cord

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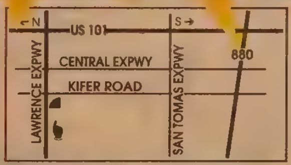

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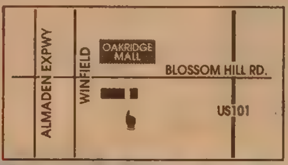

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7171A, 14ms, 1Yr. Warr.

245MB IDE **$239**
7245A, 15ms, 1 Yr. Warr.

270MB IDE **$259**
7273A, 12ms, 1Yr. Warr.

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540MB IDE **$385**
MXT-540A, 8.5ms, 256K Cache, 2 Yr. Warr.

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7290S, 14ms, 2 Year Warranty External $389

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MXT-7345S, 8.5ms, 256K Cache, 2 Yr. Warr. External $349

540MB SCSI ... **$458**
MXT-540S, 8.5ms, 256K Cache, 2 Year Warr. External $569

1.2GB SCSI **$1195**
MXT-1240S, 8.5ms, 3.5" HH, 256K Cache, 2 Yr. Warr. External $349

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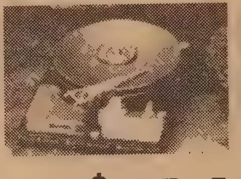

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340MB IDE **$249**
12MS. MODEL#WD2340, 3Yr. Warr.

420MB IDE **$279**
13MS. MODEL#WD2420, 3Yr. Warr.

540MB IDE **$399**
12MS. MODEL#WD2540, 3Yr. Warr.

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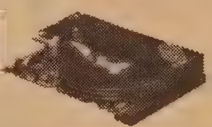
1.6GB SCSI-II



- DSP3160S
- 3.5"
- 5400RPM
- 9.5ms
- 5-Yr. Warr.

$1194

External $1319

Fast SCSI-II

CAPACITY	M/N	CACHE	RPM	SPEED	INTERNAL	EXTERNAL
1.0GB	3107L	3.5"X1"	5400	9ms	$899	$1019
1.6GB	**3160S**	**3.5"**	**5400**	**9.5ms**	**$1194**	**$1319**
2.0GB	**5200S**	**FH**	**3600**	**12.5ms**	**$1179**	**$1379**
2.1GB	**3210S**	**3.5"**	**5400**	**9.5ms**	**$1639**	**$1749**
3.5GB	5350S	FH	5400	11.5ms	$2699	$2899
4.0BG	5400S	FH	5400	11MS	$2899	$3099

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LOW PROFILE 3.5"X1"

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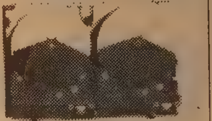
- 8.6ms Access Time
- 5400 RPM
- 512K Cache
- 5Yr. Warr.

INTERNAL **$899**

External $1019

4GB Fast SCSI-II

5.25" FORMAT: CONTAINS TWO 3.5" HDAS ADDRESSABLE AS ONE LUN



- Data Stripping Across Two Actuators
- 1MB Multi-Segmented, Dual Port Data Buffer
- <10ms Read Access Time
- 5400RPM
- Up to 20MB/Sec Transfer Rate (sync)
- 375,000 hous MTBF
- 5Yr. Warr.

$3299

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IDE

250MB IDE **$208**
14ms, CP30254

340MB IDE **$245**
13ms, CFA340A

420MB IDE **$269**
<12ms, CFS420A LOW PROFILE 3.5" X1"

540MB IDE **$369**
<12ms, CFA540A LOW PROFILE 3.5" X1"

SCSI

	INTERNAL	EXTERNAL
540MB SCSI	**$494**	**$614**
CP30540, 3.5"X1", 256K		
1.0GB SCSI	**$749**	**$859**
CFP1060S, 256K, <10MS, 3.5"X1"		

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For MAC, SUN, NeXT, and IBM Compatibles

- High Quality Metal Cases
- 2 Centronics Output
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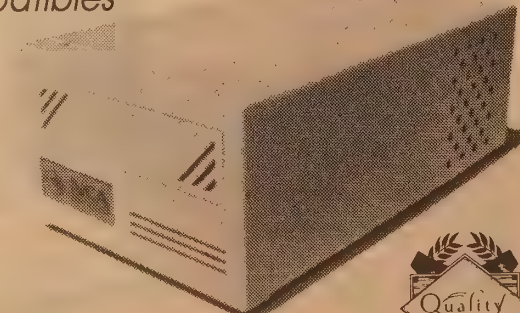
- External SCSI Cable (50C-50C or 50C-25C)
- Power Cable & Hardware
- Fully Tested & Approved
- Universal Power Supply 110/220V



Quality

See page **9** for a complete list of External Hard Drives, CD-ROM Drives, Tape Backup Drive...

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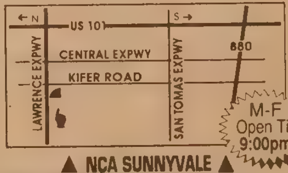

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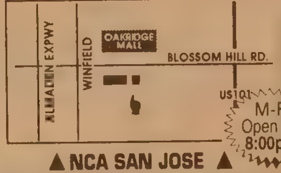

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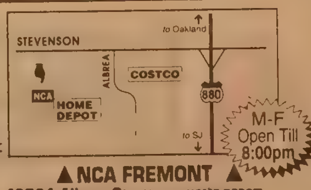

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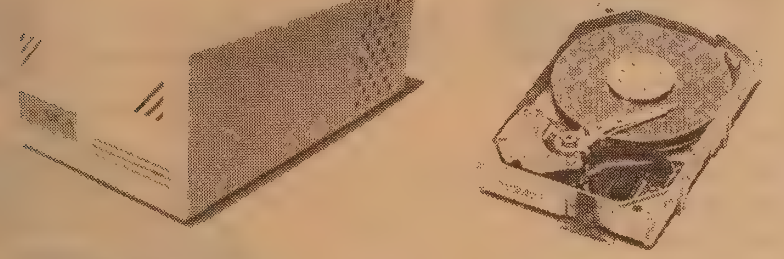

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1080S, 1.08GB Fast SCSI-II 3.5"X1"

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340MB IDE

LPS340AT, 128K Cache, 3.5X1"

$259

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IDE

CAPACITY	M/N		SPEED	SIZE	PRICE
127MB	GLS127AT	FOR NOTEBOOKS	17ms	2.5"X17mm	$249
170MB	GLS170AT		17ms	2.5"X17mm	$279
256MB	GLS256AT		17ms	2.5"X19mm	$369
170MB	ELS170A	32K	17ms	3.5X1"	$179
270MB	**LPS270A**	**128K**	**12ms**	**3.5X1"**	**$229**
340MB	**LPS340A**	**128K**	**Fast**	**3.5X1"**	**$258**
540MB	**LPS540AT**	**128K**	**12ms**	**3.5X1"**	**$399**

SCSI

CAPACITY	M/N		SPEED	SIZE	PRICE
127MB	GLS127S	FOR MAC POWERBOOKS	17ms	2.5"X17mm	$269
170MB	GLS170S		17ms	2.5"X17mm	$289
256MB	GLS256S		17ms	2.5"X19mm	$379

CAPACITY	M/N	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
170MB	ELS170S	32K	17ms	3.5X1"	$199	$329
270MB	LPS270S	128K	12ms	3.5X1"	$269	$379
340MB	LPS340S	128K	FAST	3.5X1"	$299	$409
540MB	LPS540S	128K	12ms	3.5"X1"	$489	$589
1.0GB	PD1050S	512K	10ms	3.5"	$869	$979
1.0GB	PD1080S	512K	9.5ms	3.5"X1"	$769	$879
1.2GB	PD1225S	512K	10ms	3.5"	$939	$1049
1.8GB	**PD1800S**	**512K**	**10ms**	**3.5"**	**$1099**	**$1219**

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1.7GB FAST SCSI-II 3.5"

ST11900N, 5 Yr warr. FAST, 256K Cache

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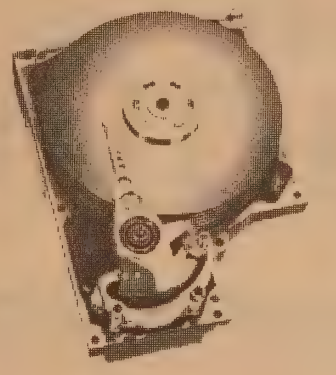
BARRACUDA SERIES



BARRACUDA I / 1.6GB

ST11950N

- ▶ 3.5", 8ms
- ▶ 7200RPM
- ▶ Fast SCSI-II
- ▶ 500,000MTBF

INTERNAL $1599

EXTERNAL $1739

BARRACUDA II / 2.1GB

ST12550N

- ▶ 3.5", 8ms
- ▶ 7200RPM
- ▶ Fast SCSI-II
- ▶ 500,000MTBF

INTERNAL $1899

EXTERNAL $2059

ST12550W Fast Wide SCSI-II....$1999

IDE

CAPACITY	M/N	CACHE	SPEED	SIZE	PRICE
245MB	ST3283A	128K	12ms	3.5"X1"	$299
263MB	ST3290A	64K	16ms	3.5X1"	$249
341MB	ST3391A	256K	13ms	3.5X1"	$298
452MB	ST3550A	256K	12ms	3.5X1"	$399
528MB	ST3600A	256K	10.5ms	3.5X1"	$499
235MB	ST9235AG	for	NOTEBOOKS	2.5"	$Call

SCSI

CAPACITY	M/N	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
344MB	ST3390N	256K	12ms	3.5"x1"	$399	$529
456MB	ST3550N	256K	12ms	3.5X1"	$429	$549
525MB	ST3600N	256K	10.5ms	3.5X1"	$499	$599
1.05GB	ST11200N	256K	10.5ms	3.5"	$799	$919
1.0GB	**ST31200N**	**256K**	**9ms**	**3.5"x1"**	**$779**	**$889**
1.4GB	ST41651N	256K	15ms	FH	$1099	$1299
1.7GB	ST11900N	256K	FAST	3.5"	$1099	$1219
1.6GB	ST11950N	1024K	8ms	3.5"	$1599	$1739
1.9GB	ST42100N	256K	12.9ms	FH	$1489	$1689
2.1GB	ST42400N	256K	11ms	FH	$1699	$1899
2.1GB	**ST12400N**	**256K**	**9ms**	**3.5"**	**$1499**	**$1629**
2.1GB	ST12550N	1024K	8ms	3.5"	$1899	$2059
2.9GB	ST43400N	512K	10ms	FH	$2199	$2399
2.9GB	ST43401N	512K	10ms	5.25	$2499	$2699
9.0GB	ST410800N	512K	11.5ms	5.25	$4599	$4799

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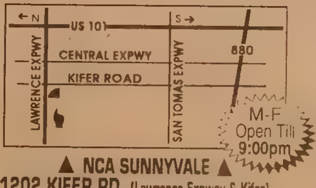

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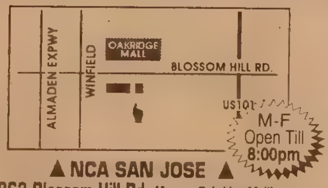

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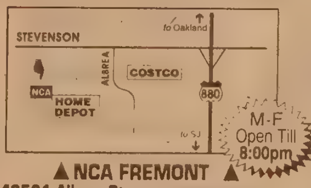

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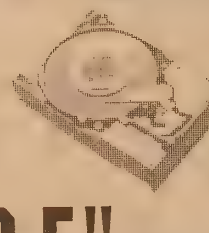
- 5400RPM
- 3.5"X1" Low Profile



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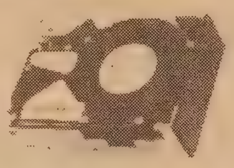
- MC2217S
- 10ms Seek Time
- 5400RPM
- 3.5"



$1149

EXTERNAL...$1259

IDE

	MODEL	RPM	SPEED	SIZE	INTERNAL
1.0GB	MC2210A	5400	10ms	3.5"	$829
1.75GB	MC2217A	5400	10ms	3.5"	$1199

SCSI

	MODEL	RPM	SPEED	SIZE	INTERNAL	EXTERNAL
1.0GB	MC2210	5400	10ms	3.5"	$759	$869
1.0GB	MC2210AV	Audio/Video			$999	$1109
1.05GB	MC4100	5400	8.5ms	3.5"	Call	Call
1.4GB	MC1908	5400	11ms	FH*	$1249	$1449
1.75GB	MC2217	5400	10ms	3.5"	$1144	$1259
1.75GB	MC2217AV	Audio/Video			$1299	$1409
1.8GB	MC1548	3600	14ms	FH	$1499	$1699
2.0GB	MC1926	5400	11ms	FH	$1599	$1799
3.0GB	MC1936	5400	11ms	FH	$2299	$2499

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1.0GB	Microdisk LT	3.5"	PC/MAC	10ms	$1299
1.7GB	Microdisk LT	3.5"	PC/MAC	10ms	$1599
1.0GB	Microdisk AVLT	3.5"	PC/MAC	10ms	$1399
1.7GB	Microdisk AVLT	3.5"	PC/MAC	10ms	$1699
2.0GB	Microdisk LS	5.25	PC/MAC	13ms	$1999
3.0GB	Microdisk LS	5.25	PC/MAC	13ms	$2797

*Price Includes installation Kit for PC or MAC

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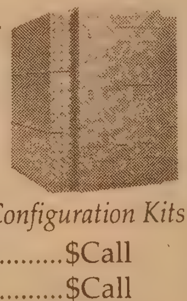

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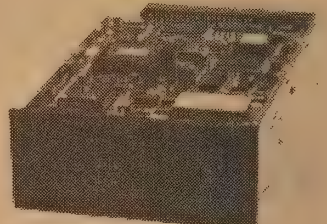
- 12ms Seek Time
- 64K Read/Write Cache(SCSI)
- 5-Year Warranty



$749

IDE

CAPACITY	M/N	CACHE	SPEED	SIZE	PRICE
520MB	M2624T	64K	12ms	3.5"	$399

SCSI

CAPACITY	M/N	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
240MB	M2637SA	Notebook	11ms	3.5"	$359	N/A
1.0GB	M2694ESA	256K	10ms	3.5"	$749	$859

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2.1GB 3.5" FAST SCSI-II

- HP C2490
- 8.9ms Seek Time
- 6400RPM
- 500,000RPM
- 5-Yr. Warr.
- 57 Mbits/s Trans. Rate
- Up to 10Megabytes/s (synchronous)

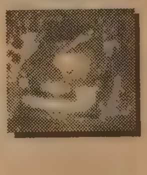
EXTERNAL.....$1729

$1599

1.05GB 3.5" SCSI-II

Formatted Capacity

- HP C2247
- 10.5ms Seek Time
- 5400RPM
- 300,000 MTBF
- 5-Yr. Warr.
- Up to 24 Mbits/s Trans. Rate
- Up to 10 Mbytes/s Trans. Rate (synchronous)



EXTERNAL $929

$799

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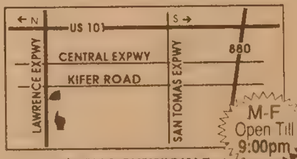

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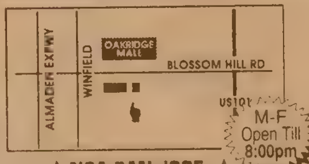

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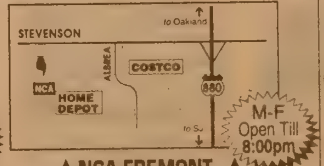

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290Mb	Maxtor	14ms	2Yr	$289
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525Mb	Seagate	10ms	1Yr	$599
540Mb	Quantum	12ms	2Yr	$589
540Mb	Maxtor	8.5ms	2Yr	$569
540Mb	Conner	12ms	1Yr	$614
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1.0Gb	Conner	<10ms	1Yr	$859
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1.0Gb	Micropolis 2210	10ms	5Yr	$869
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1.0Gb	HP	10ms	5Yr	$929
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1.0Gb	Fujitsu	10ms	5Yr	$859
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1.2Gb	Maxtor	8.5ms	3Yr	$1309
1.6Gb	DEC	9ms	5Yr	$1319
1.7Gb	Seagate	Fast	5Yr	$1219
1.7Gb	Micropolis	10ms	5Yr	$1259
2.1Gb	Seagate	9ms	5Yr	$1629
2.1Gb	HP	8.9ms	5Yr	$1729
2.1Gb	DEC	9ms	5Yr	$1749

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1.8Gb	Micropolis	14ms	5Yr	$1699
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2.1Gb	Seagate	11ms	5Yr	$1899
2.0Gb	Micropolis	11ms	5Yr	$1799
2.0Gb	Fujitsu	12ms	5Yr	$1599
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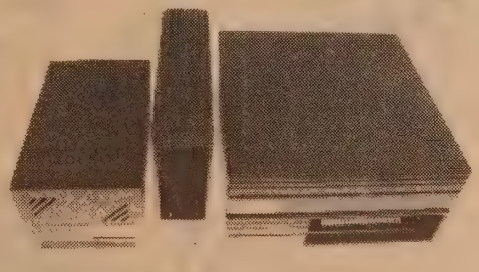

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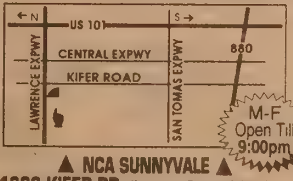

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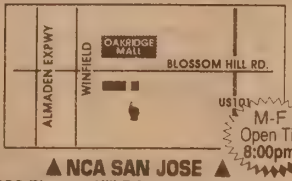

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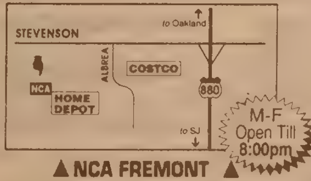

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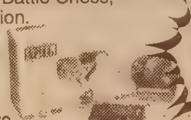

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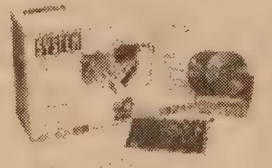

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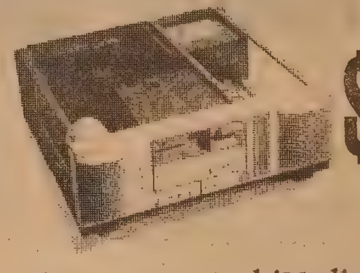

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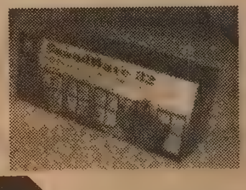

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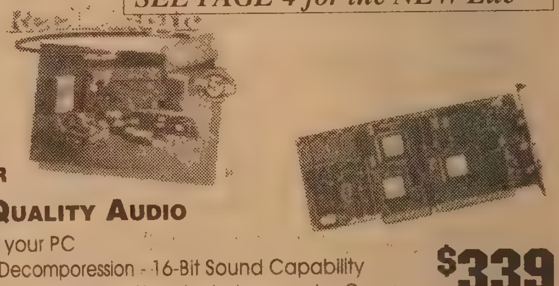

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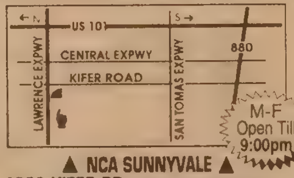

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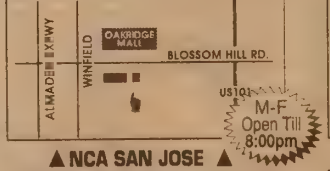

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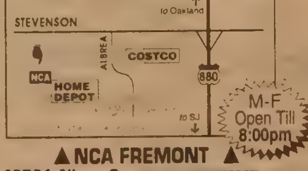

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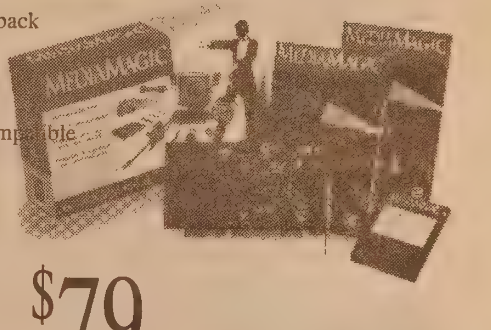

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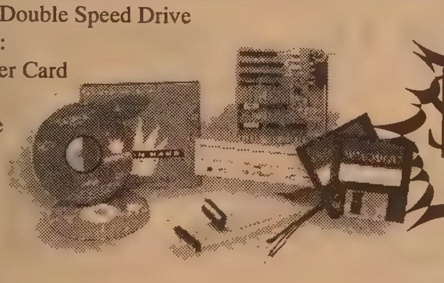

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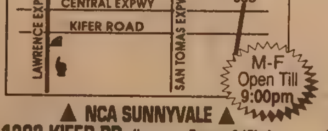

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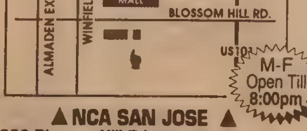

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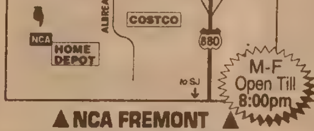

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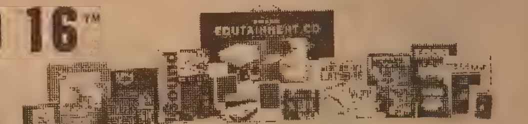

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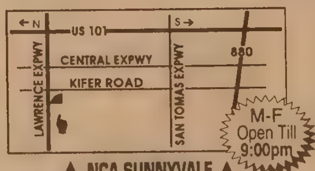

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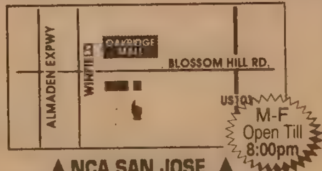

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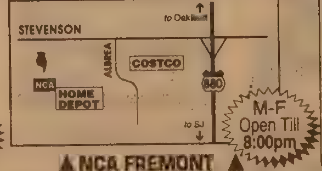

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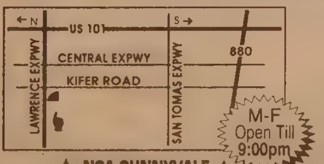
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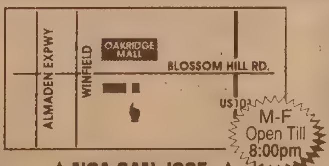
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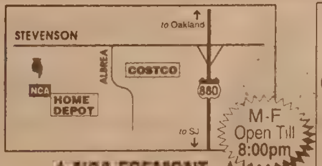
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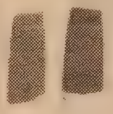

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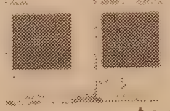

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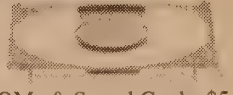

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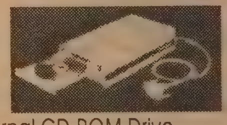

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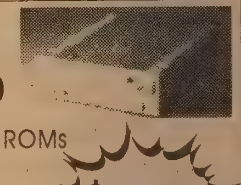

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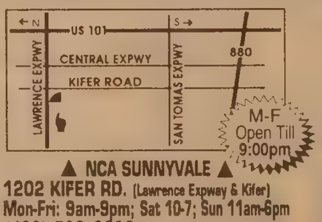

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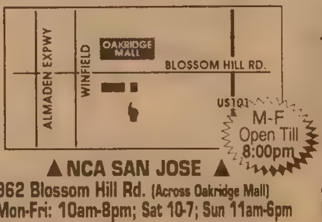

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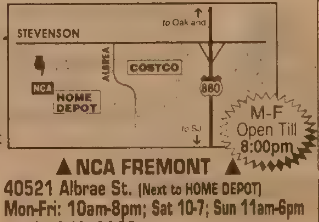

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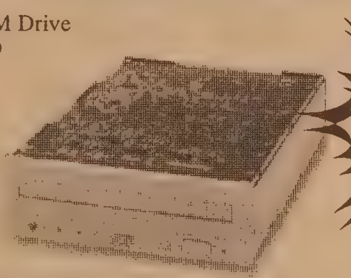

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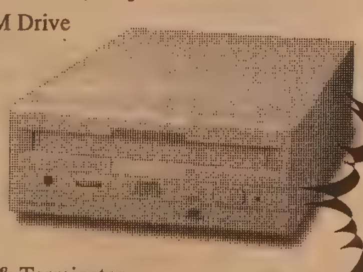

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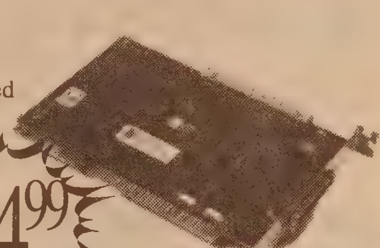

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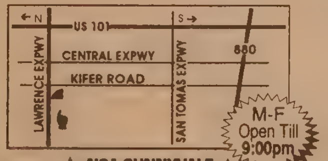

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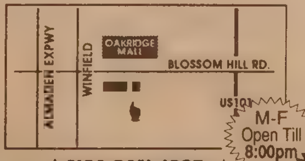

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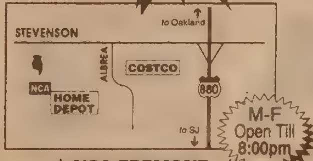

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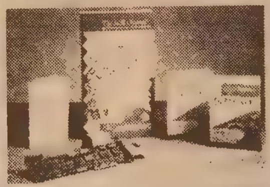

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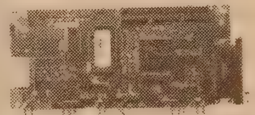

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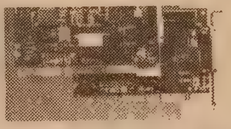

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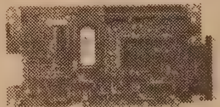

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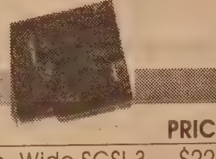

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20	PCI SCSI Host Adapter, Sup. Wide SCSI-3	$229

BUSLOGIC

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MODEL	DESCRIPTION	PRICE
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BT445S	Bus Master Fast SCSI Kit for VL Bus	$274
BT742A	EISA Bus Master SCSI-II Adapter Kit	$329
BT747S	EISA Bus Master Fast SCSI	$364

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Fast!SCSI™ VESA Local Bus		$199
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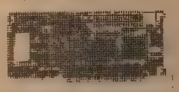

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GSI 21	16-Bit 2FD/Tape Backup	$59
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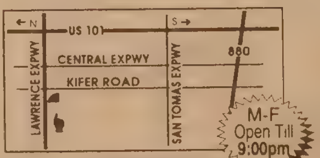

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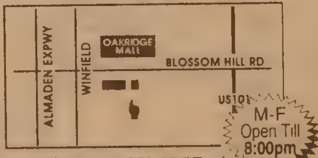

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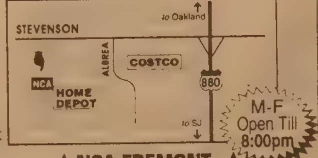

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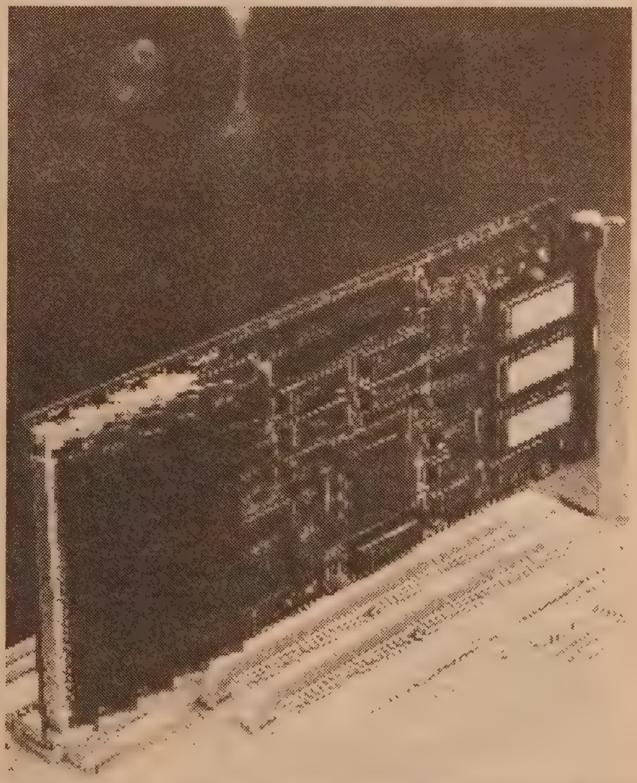

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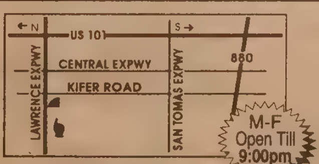
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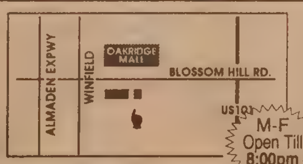
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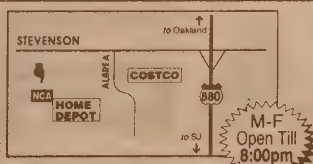
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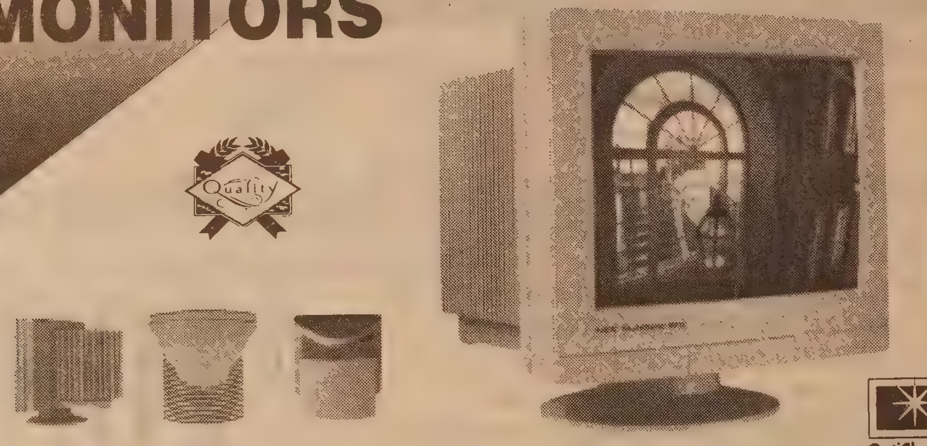

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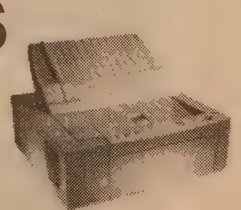

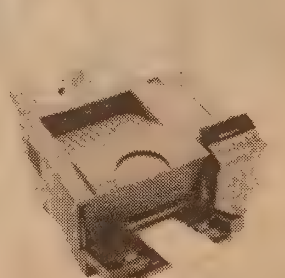

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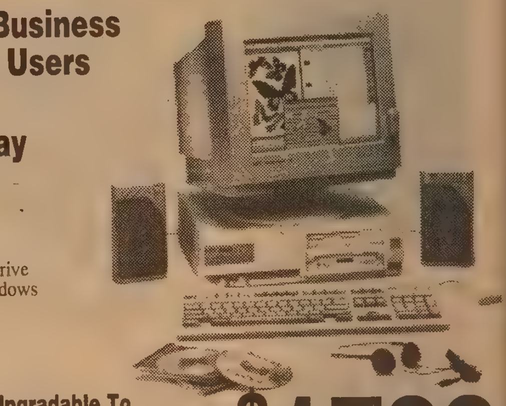

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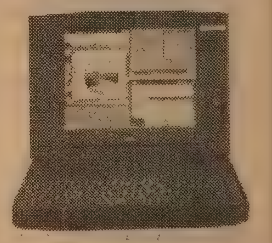

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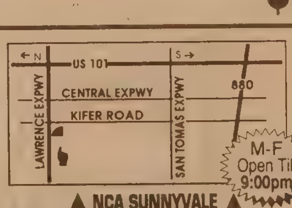

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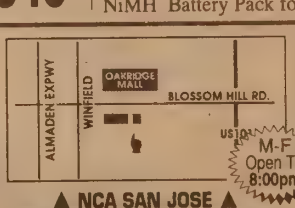

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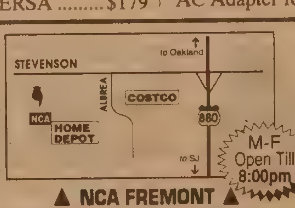

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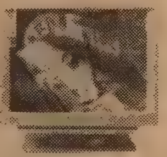

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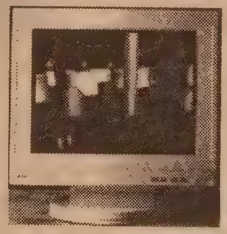

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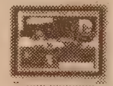

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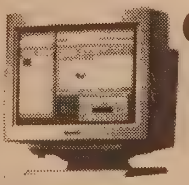

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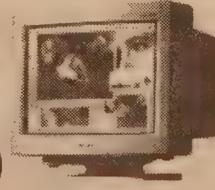

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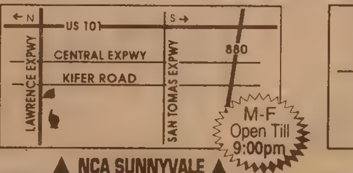

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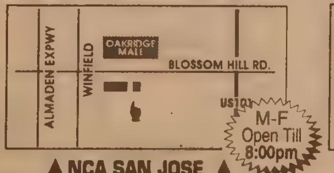

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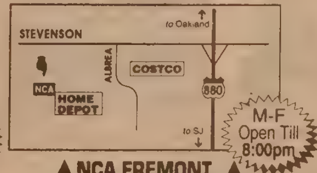

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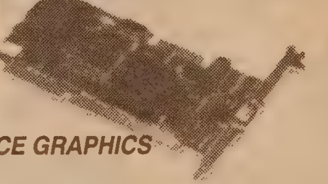

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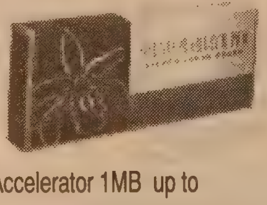

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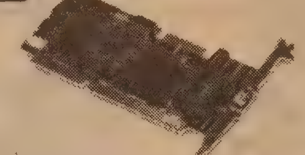

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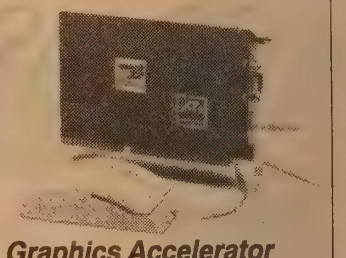

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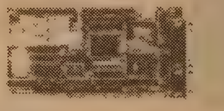

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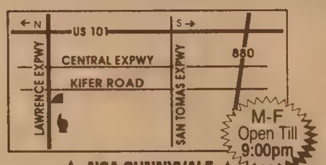

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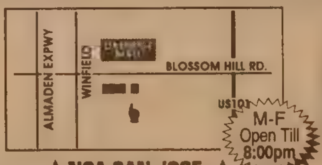

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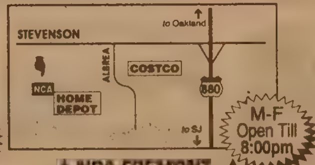

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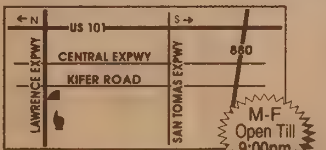
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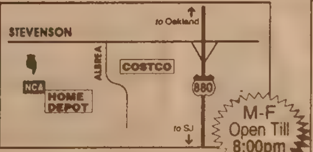
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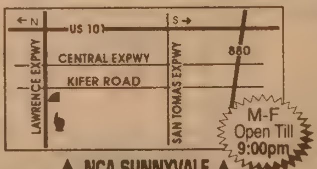

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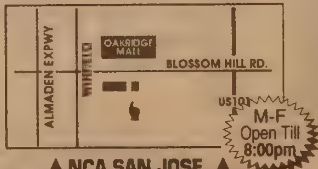

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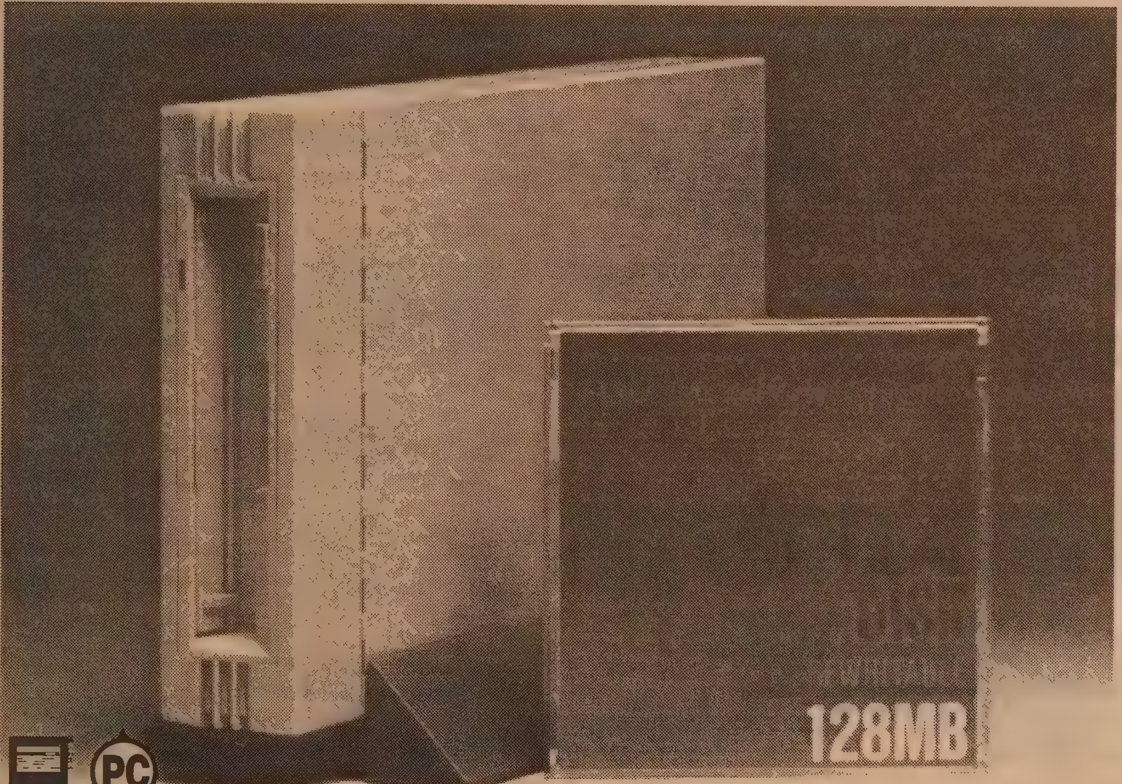

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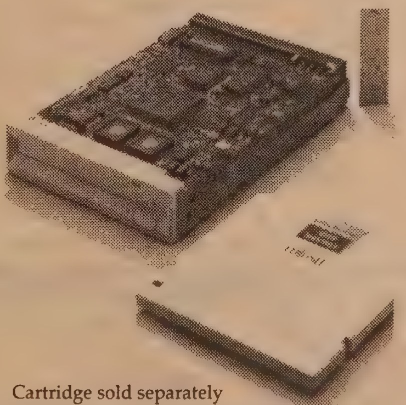

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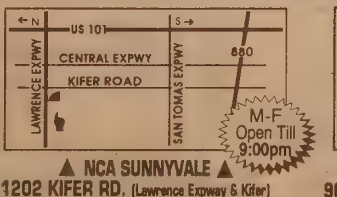
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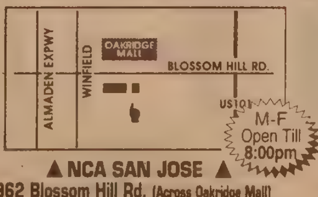
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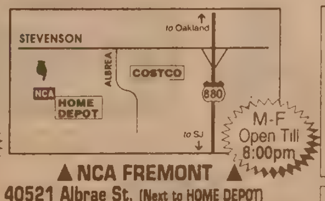
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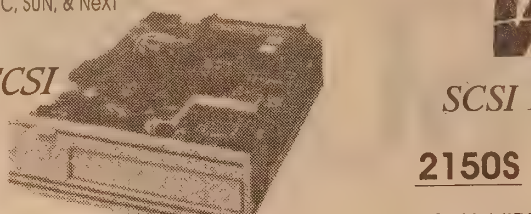

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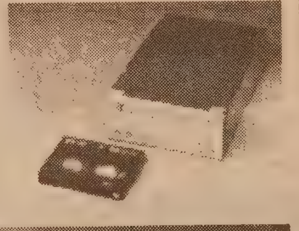

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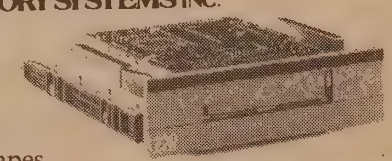

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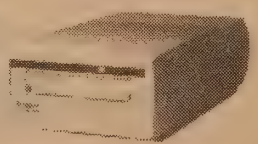

PARALLEL PRINTER PORT EXTERNAL TAPE BACK-UP SYSTEMS

RUNS OFF PARALLEL PRINTER PORT

CAPACITY	MODEL/TYPE	EXTERNAL
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250MB	**TRAKKER 250**	**$323**

CONNER
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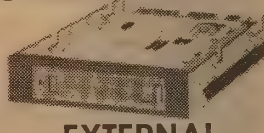
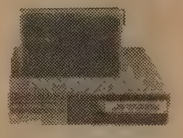
TAPE BACKUP
INCLUDES 1 CARTRIDGE



INTERNAL	EXTERNAL
RUNS OFF FLOPPY PORT	RUNS OFF PARALLEL PORT
$149	$329

WANGTEK



CAPACITY	MODEL	INTERNAL	EXTERNAL
250MB	5150S SCSI	$399	$499
525MB	5525S SCSI	$539	$649

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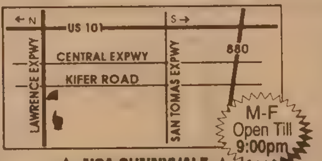

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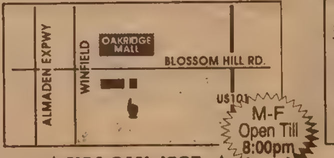

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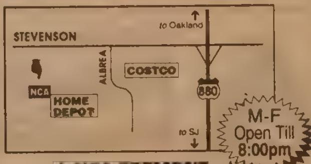

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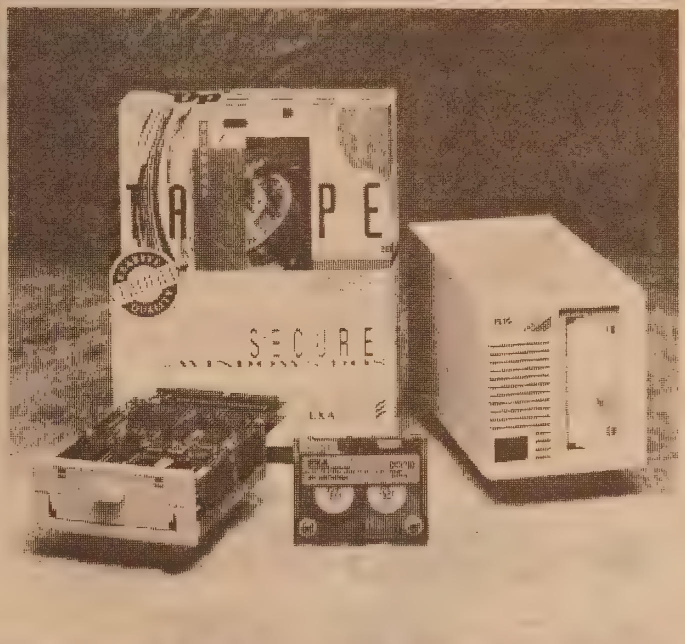

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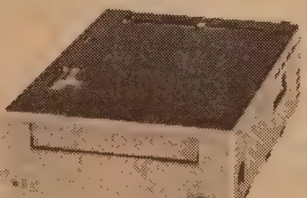
2GB EXB-4200



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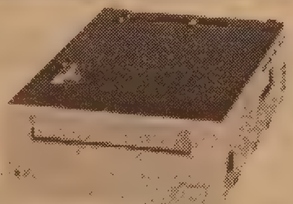

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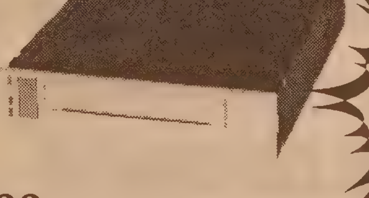

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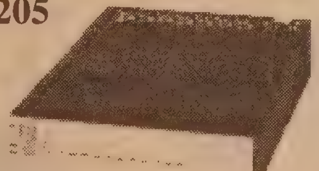

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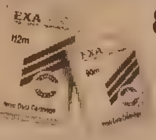

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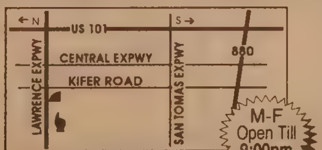
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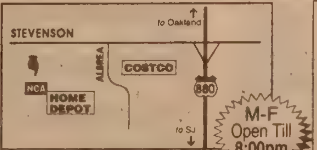
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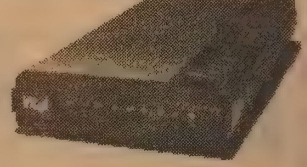

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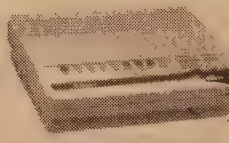

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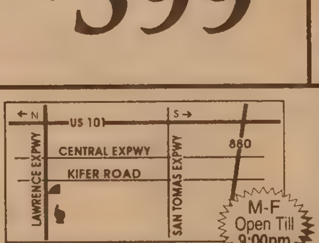

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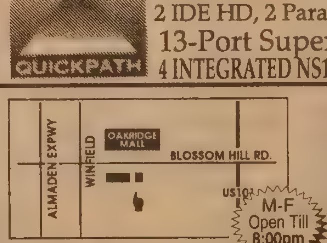

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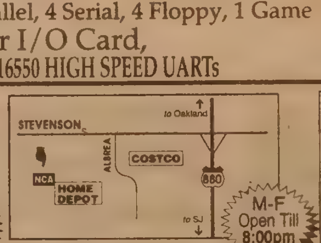

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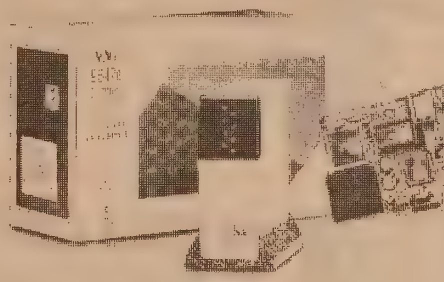

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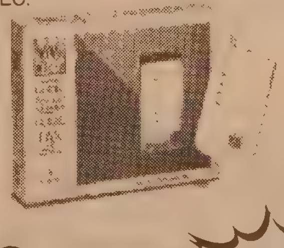

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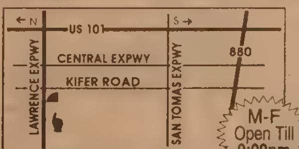

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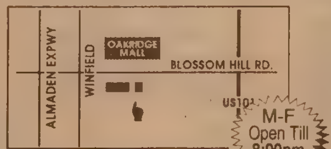

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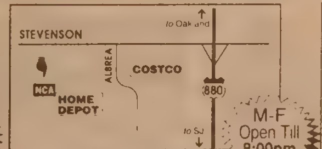

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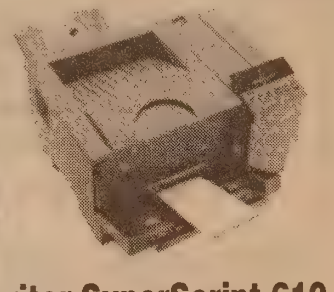

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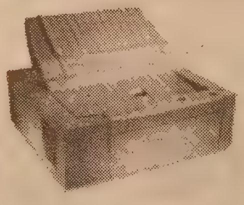

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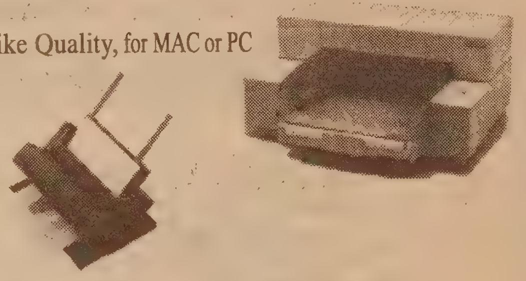

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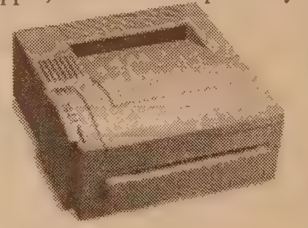

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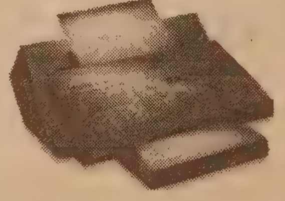

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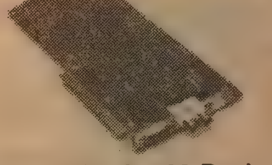

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NE2000 plus 16-bit Twisted Pair	$103	473
NE2000 plus Combo	$133	549
NE3210 32-bit EISA Combo	$213	

NOVELL SOFTWARE

Ver.	5 user	10 user	25 user	50 user	100 user	250 user
3.12	$613	$1393	$2083	$2694	$3994	$6994
4.01	$819	$1793	$2599	$3594	$5395	$9694

SPECIAL OFFER

16-bit Card with Novell Lite 1.1	$99
Leadman 10 Base T or Coax 8-bit/16-bit	$59

SCANNERS FOR PC OR MACINTOSH

AVÉC *Colour* 2400

SEE PAGE 5
For Examples & Specs

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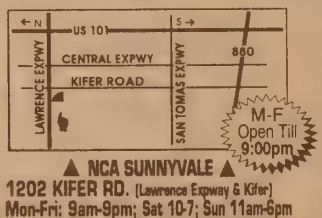

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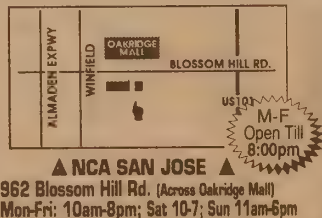

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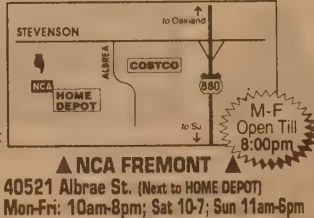

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1MBX9	80ns	3Chip	$Call
1MBX9	80ns	9Chip	$Call
1MBX9	70ns	3Chip	$Call
1MBX9	70ns	9Chip	$Call
1MBX9	60ns	3Chip	$Call
1MBX9	60ns	9Chip	$Call
4MBX9	80ns	9Chip	$Call
4MBX9	70ns	9Chip	$Call
4MBX9	60ns	9Chip	$Call
16MBX9	70ns	9Chip	$Call

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1X9/60	$Call

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486DX-50MHz	$Call
486DX/2-50MHz	$Call
486DX/2-66MHz	$Call
Pentium 60MHz & 66MHz	$Call
486DX2/66MHz	$Call

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4MB	$Call
8MB	$Call

HP Laser Jet IIP, III, IIID HP IIIsi

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Compaq Page MRQ Printers EPSON Action II
Printers OKI 400 Printers & NEC Printers

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10.4MB FlashCard Kit	$649

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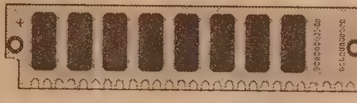
☐ EO Personal Com. 440/880
☐ NCR 3170 Safari*

FlashCard Only, No Software Needed
* Kit Includes FlashCard & Software

2.6MB FlashCard	$289
5.2MB FlashCard	$349
10.4MB FlashCard	$549
20MB FlashCard	$999

Macintosh



1MBX8	80ns	2Chip	$Call
1MBX8	80ns	8Chip	$Call
1MBX8	70ns	2Chip	$Call
1MBX8	70ns	8Chip	$Call
2MBX8	80ns	2Chip	$Call
4MBX8	80ns	8Chip	$Call
4MBX8	70ns	8Chip	$Call
4MBX8	60ns	8Chip	$Call
4MBX8	80ns	II-FX	$Call
16MBX8	70ns	8Chip	$Call

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Installation $15
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Super Voyager VLB-II

- 2 VESA Local Bus Slots - 7 ISA Slots
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- 256K Cache

486DX33 VESA 256K	$599
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ZIF SOCKET FOR UPGRADABILITY
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MICRONICS

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PCI 486/256K Cache $229

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without CPU **$149**

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WHY PCI?

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Fewer incompatibility & reliability Problems.
Scalable throughput 32-bit/64-bit backward compatibility.
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Auto Configuration features.
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PCI Pentium Motherboard

- Itegrated SMC37C665 Super I/O Chip Providing: Two FIFO Hi Speed Serial Ports/1 parl.
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- Intel Mercury PCI Chip Set
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- Intel Pentium 60MHz Processor
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NCA's PCI/i-486

PCI 486 Motherboard

- Three 32bit PCI Slots
- Four 16bit ISA Slots
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- ZIF Socket for future upgrade
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NCA's PCI add-on OPTIONS:

Hi-Quality 32Bit PCI local bus interface Cards.

PCI-Diamond Viper $428
P9000 Chip / 2MB Vram, 64 bit Architecture.

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PCI-Matrox MGA 2MB ...$439
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- VESA Local Bus 128K Cache
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IBM 486/7MHz CPU with 16Kb Int. Cache, up to 64 (using 72Pin Simms), 2VESA Slots, Co-Processor **$499**

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128K Cache $89

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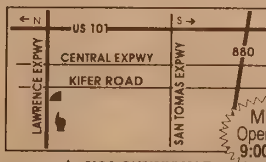

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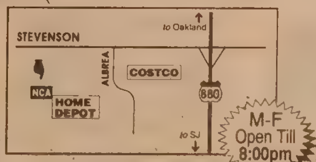

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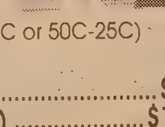
EXTERNAL SCSI DRIVE CASES



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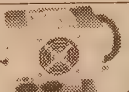

250Watt UL approved AT	$49
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400Watt UL for Tower	$179

American Power Conversion APC®

UNINTERRUPTED POWER SUPPLIES

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BK400VA	$169
BK450VA	$199
BK600VA	$279
BK900VA	$399
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SPIKE STIK AC SPIKE & LINE SUPPRESSOR	$12.99
SPIKE BAR SUPER 7 7-OUTLET AC SURGE W/NOISE FILTER & DIAGONTIC CIRUITRY	$15.99
SPIKE BAR (SK 6-6) 6-OUTLET PREMIUM SURGE SUPPRESSOR	$22.99
TERMINATOR TR6 SURGE SUPPRESSOR 13 000 amp protection	$28.99
ISOBAR4 ULTRA PREMIUM SURGE SUPPRESSOR W/ CIRCUIT DIAGNOTICS	$43.99
ISOBAR6 6-OUTLET PREMIUM SURGE SUPPRESSOR	$47.99
POWER MISER AUTOMATIC MONITOR SHUTDOWN TIMER & SURGE SUPPRESSOR	$49.99

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- ▶ HIGH QUALITY CASES
- ▶ UL APPROVED POWER SUPPLY
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DESCRIPTION		PRICE
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EC-477	Med Tower 200W	$99
EC-672	Full Tower 250W	$119
EC-383 IDU	Mini Tower 200W	$79
EC-487IDU	Med Tower 200W	$109
EC-682 IDU	Full Tower 250W	$139
CTC-26DU	MiniTower 230W	$59
CTC-27DU	MedTower 230W	$89
CTC-28DU	Full Tower 250W	$109
CTC-49DU	SuperTower 300W	$159

NCA's 9-BAY TOWER CASE 250W UL... $109
• 6 EXPOSED BAYS • 3 HIDDEN BAYS

POINTING DEVICES

LOGITECH

MouseMan Serial $52.99
MouseMan Bus Ver. ...$63.99

NAME	PRICE
FIRST-MOUSE	$36.99
TrackMan-II	$74.99
MOUSE-MAN Cordless	$89.99
2-Button Mouse	$17.99
CYBERMAN	$79.99
SoundMan 16	$79.99
ScanMan Color	$399
ScanMan 256 for Windows	$159.99
ScanMan 32	$109.99
PhotoMan Plus for MAC/PC	$559

Microsoft

NAME	PRICE
Microsoft Mouse II OEM	$49

MICROSPEED

NAME	PRICE
PC-TRAC serial/bus/PS/2	$58.99/99.99/79.99
MacTRAC 2.0 SE & Mac II	$69.99
WinTRAC serial for Windows	$79.99
MicroTRAC serial, PS/2/MAC	$57.99/65.99

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NAME	PRICE
MOUSE 2-Button serial, 350dpi Software & Pad	$19.99
PC TRACKBALL II 3-Button 680dpr, Software	$49.00
PAGEBRUSH/256 HandScanner 256 Grayscale	$129.00
COBRA Pistal Grip Joystick IBM XT, AT compatible	$11.99

PoinTex

NAME	PRICE
MAC 2-BUTTON MOUSE ADB PORT	$24.99
MAC ACTION MOUSE WITH SOFTWARE & MOUSEPAD	$59.99

QuickShot by Bondwell

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RAIDER 5 JOYSTICK	**$15.99**
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WARRIOR 5 Deluxe Analog Joystick for PC	**$9.99**
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Sound Mate II Amplified Speakers	**$19.99**

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CENTRONICS TO SCSI-II	$39.99
CENTRONICS TO MAC 25-PIN	$7.99
CENTRONICS 50 TO CENTRONICS 50, 6FT	$12.99
CENTRONICS 50 TO CENTRONICS 50, 3FT	$9.99
CENTRONICS TO DB-50	$39.99
DB-50 TO SCSI-II	$39.99
DB-50 TO DB-50	$39.99
SCSI-II TO SCSI-II	$39.99
FAST WIDE SCSI-II TO CENTRONICS	$89.99

HARD DRIVE INTERNAL CABLES

DESCRIPTION	PRICE
SCSI 50-PIN RIBBON 3 CONNECTOR 2 devices	$5.99
SCSI 50-PIN RIBBON 4 CONNECTOR 3 devices	$9.99
SCSI 50-PIN RIBBON 5 CONNECTOR 4 devices	$12.99
SCSI 50-PIN RIBBON 8 CONNECTOR 7 devices	$22.99
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FLOPPY & IDE CABLE SET	$5.99

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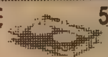

DESCRIPTION	SINGLE	5-PACK
2120 (120/250MB)		
SONY QD2120 120/250MB	16.95	79.00
3M 2120F FORMATTED XMAT	18.00	89.00
MAXELL DC2120 UNFORMATTED	16.99	79.00
MAXELL DC2120 FORMATTED Q80	18.99	89.99
6000(1/4" TAPES)		
SONY QD6150 150MB	$19.95	$95.00
SONY QD6250 250MB	$25.95	$125.00
SONY QD6525 525MB	$29.95	$145.00
MAXELL D6250 250MB	$19.95	$95.00
MAXELL D6525 525MB	$24.99	$117.00
3M DC6525 525MB	$29.95	$145.00
3M MAGNUS 1.6GB	$CALL	$CALL
DAT 4mm 90meters		
SONY 90M	$17.95	$75.00
MAXELL 90M	$15.95	$69.00
DAT 8mm 112meters		
EXABYTE UP TO 5.0GB TAPES	$18.00	$89.00
TDK	$9.99	$45.00
MAXELL	$11.99	$55.00
FLOPPY DISKS		
SONY 2.88M DISKS	10PACK ONLY $62.50	
BULK 1.44M 3.5" FORMATTED	.68¢	25PACK $15.99
BULK 1.2M 5.25" FORMATTED	.39¢	25PACK $9.99
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SYQUEST 44MB SQ400	$59.00	$295
SYQUEST 88MB SQ800	$95	$459
SYQUEST 105MB 3.5"	$59	$295
SYQUEST 270MB 3.5"	**$95**	**$459**
BERNOULLI	See pg. 22	
SONY M.O. 128MB OPTICAL	**$39**	**$185**
VERBATIM 128MB OPTICAL	**$39**	**$185**
FUJITSU DYNAMO 128MB	**$39**	**$185**
KOMAG 128MB OPTICAL	**$29**	**$139**
RICOH 128MB OPTICAL	**$45**	**$215**
MAXELL 128MB OPTICAL	**$39**	**$185**
MAXOPTIX 1.0GB GLASS OR POLY	$195	$979
RICOH 650MB	$145	$699

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Kit Includes:

CleanView Anti-Static CRT/VDT Cleaner • CleanKey Keyboard Cleaner • PerfectPrint Printer Cleaner • DisClean Disk Drive Cleaner • Instruction Manual • Software Diskette

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DESCRIPTION	PRICE
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Spill Resistant 101	$19.99
MITSUMI High Quality Keyboard	$29.99
ALPS SWITCH Click-Style	$39.99
MACINTOSH Compatible Click-Style Extended	**$79.99**

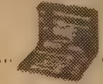
FOCUS

DESCRIPTION	PRICE
FOCUS 2000 W/COVER	$42.99
FOCUS 8000 with Calculator	$59.99
FOCUS 9000 with Calculator / programmable	$69.99

MICROSPEED

DESCRIPTION	PRICE
DELUXE 101-KEY MEMBRANE includes PS/2 adp.	$44.99
DELUXE 101-KEY TACTILE includes PS/2 adp.	$58.99

COMPUTER TOOL KIT



10PC TOOL KIT	$10.99
39PC DELUXE w/SOLDERING IRON	$42.99

CPU COOLING FAN.......... $7.99

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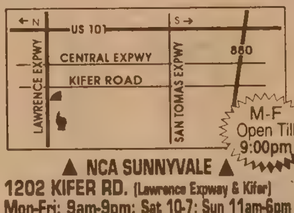

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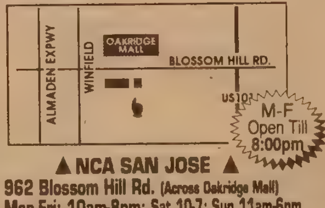

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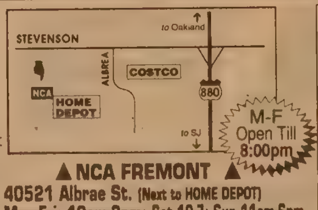

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RESOURCES

Calendar Of Events

CONFERENCES, SHOWS, SPECIAL EVENTS

APRIL

April 30–May 1 Computer Show And Sale. Solano County Fairgrounds, Vallejo. MarketPro. Call: (415)456-6730.

MAY

May 1 California Computer Show And Sale. San Mateo Expo Center, San Mateo. Robert Austin Corp.

May 1 Computer, Ham Radio, Electronics Swap Meet. Livermore. Livermore Amateur Radio Club. Call: (510)447-3857 or (510)783-8052.

May 2 Federal On-Site Technology Expo. Federal Building, Sacramento. Federal Business Council. Call: 1-800-878-2940.

May 2–5 Client/Server Technology Fair. San Jose. Smith and Smith. Call: 1-800-650-4321.

May 3 Federal On-Site Technology Expo. McClellan Air Force Base, Sacramento. Federal Business Council. Call: 1-800-878-2940.

May 3–4 PowerOpen Conference. Boston. The PowerOpen Association. Call: 1-800-457-0463.

May 4 Federal On-Site Technology Expo. Travis Air Force Base, Fairfield. Federal Business Council. Call: 1-800-878-2940.

May 5 Federal On-Site Technology Expo. Sacramento. Federal Business Council. Call: 1-800-878-2940.

May 7 Beyond Office Automation: Network Based Intelligent Office Systems. San Francisco. Network Services Group. Call: (415)863-8407.

May 7 California Computer Show And Sale. Cow Palace, San Francisco. Robert Austin Corp.

May 9–13 1994 Micro Focus User Conference. San Francisco. Micro Focus. Call: (415)496-7356.

May 11–13 Virtual Reality '94. San Jose. *Virtual Reality World* Magazine. Call: 1-800-632-5537.

May 12–13 How To Win In The Global Marketplace Meeting. San Francisco. American Management Association. Call: (518)891-0065.

May 14 California Computer Show And Sale. Oakland Coliseum, Oakland. Robert Austin Corp.

May 14 Software Dealer Business Expo '94. Lafayette. THEOS Software Corporation. Call: Jerry Myers, 1-800-600-5660.

May 14–15 The Computer Show & Sale. Cal Expo, Sacramento. MarketPro. Call: (415)456-6730.

May 17–20 The 7th International Software Quality Week In San Francisco Conference. San Francisco. Software Research, Inc. Call: 1-800-942-SOFT.

May 18 There Be Dragons: Firewalls & Internet Security Free Presentation. San Jose. Computer Literacy Bookshops. Call: (408)435-1118.

Continued

MAY 11

MATPLAN BETA TESTING

Holiday Inn—Stanford, Palo Alto

Dr. Horst Burwick, chairman of GMI, Inc., will be hosting an opportunity to test MATPLAN, a fourth-generation language. MATPLAN Windows is a programming language for processing matrices with run-time access to Lotus 1-2-3, Excel, and Quattro Pro. It can be used to integrate and speed up spreadsheet applications and run them on Windows and OS/2 as well as in a UNIX client-server version. In addition, MATPLAN enables users to transform spreadsheet data into graphics. Refreshments and food will be provided. Free. For more information, call GMI, Inc. at (415)855-9484.

MAY 11–13

VIRTUAL REALITY '94

San Jose Civic Center and Fairmont Hotel

In its fifth year, the Virtual Reality '94 Conference and Exhibition is devoted to the commercial development of virtual reality, cyberspace, and artificial reality for use in design, entertainment, medicine, the military, networking, and training. The conference program will address the full range of issues in developing a VR market, including technical issues affecting commercial development, investment issues, market projections, and legal questions. The exhibition will feature over sixty leading virtual reality hardware and software companies, as well as companies marketing virtual reality products for applications from arcades to stockbrokers. For more information or to register, call 1-800-MECKLER or (203)226-6967.

MAY 14

VIRTUAL REALITY SEMINAR

Redwood City

Division Inc., a supplier of virtual reality systems for the military, commercial, entertainment, and scientific markets, is presenting an opportunity to experience fully immersive virtual reality and learn how it all works. Attendees will receive instructional materials and fully immersive play time. Video taping and video cameras are welcome. Admission is $60 in advance. For details, call (415)364-6067, email info@division.com , or fax (415)364-4663.

MAY 23–26

SILICON GRAPHICS EXPO '94

San Jose Convention Center

The theme of Silicon Graphics Expo '94 is solutions. SGI ended 1993 with the culmination of an entirely new line supported by scores of leading software packages. The full range of Silicon Graphic solutions and market support will be featured at the show through a variety of seminars, panel discussions, tutorials, exhibits, and demonstrations. For information on attending, speaking, or exhibiting at the third annual Silicon Graphics Expo, call PCI Trade Show Management, 1-800-727-EXPO, or email sigexpo@pcinews.lonestar.org .

Calendar Of Events *continued*

May 18–20 GTC '94: A Cooperative Vision: Making The Connection. Sacramento. Government Technology. Call: (916)363-5000.

May 18–20 Western Regional Government Technology Conference. Sacramento. Government Technology Conference. Call: (916)363-5000.

May 20 Hitchhiker's Guide To The PowerPC Universe Free Presentation. Cupertino. Computer Literacy Bookshops. Call: (408)973-9955.

May 21 California Computer Show And Sale. Santa Clara County Fairgrounds, Santa Clara. Robert Austin Corp.

May 21 The Computer Show & Sale. Sonoma County Fairgrounds, Santa Rosa. MarketPro. Call: (415)456-6730.

May 21 Multicom Expo. San Jose Convention Center. American Shows. Call: 1-800-633-3976 or (510)222-2757.

May 22–27 SGI Developers Conference And Expo. San Jose. PCI. Call: (512)331-7761.

May 23 DB Expo '94: Database, Client/Server, And Information Technology. San Francisco. Blenheim. Call: (415)966-8440.

May 23–27 DB/Expo '94. San Francisco. Blenheim. Call: 1-800-829-3976.

May 23–27 Silicon Graphics Expo. San Jose. Silicon Graphics Computer Systems. Call: 1-800-727-EXPO.

May 24 ATM: What? And Why? Free Presentation. San Jose. Computer Literacy Bookshops. Call: (408)435-1118.

May 28 The Computer Show & Sale. Solano County Fairgrounds, Vallejo. MarketPro. Call: (415)456-6730.

May 28–29 Multicom Expo. Marin Center Exhibit Hall, San Rafael. American Shows. Call: 1-800-633-3976 or (510)222-2757.

May 29 The Computer Show & Sale. Scottish Rite Center, Sacramento. MarketPro. Call: (415)456-6730.

May 31–June 3 Spring Internet '94 Conference & Exhibit. San Jose. Mecklermedia Corporation. Call: 1-800-MECKLER.

JUNE

June 2–4 The Multimedia Conference At VISCOMM West '94. San Francisco. United Digital Artists. Call: 1-800-243-3238.

June 4 California Computer Show And Sale. Cow Palace, San Francisco. Robert Austin Corp.

June 5 Computer, Ham Radio, Electronics Swap Meet. Livermore. Livermore Amateur Radio Club. Call: (510)447-3857 or (510)783-8052.

June 6–8 Digital World 94 Conference And Exposition. Los Angeles. Seybold Seminars. Call: 1-800-488-2883, (415)578-6900.

June 8–10 Second Annual Virtual Reality And Persons With Disabilities Conference. San Francisco. IEEE and CSU, Northridge. Call: (818)885-2578.

June 9–11 CorCon 4: The Fourth ACAD CorelDRAW Conference And Technology Expo. Glendale. Association of Corel Artists and Designers. Call: (818)563-ACAD.

June 11 California Computer Show And Sale. Oakland Coliseum, Oakland. Robert Austin Corp.

June 11 The Computer Show & Sale. Sonoma County Fairgrounds, Santa Rosa. MarketPro. Call: (415)456-6730.

June 12 The Computer Show & Sale. Concord. MarketPro. Call: (415)456-6730.

June 13–15 NECC '94: The National Educational Computing Conference. Boston. International Society for Technology in Education. Call: Donella Ingham, (503)346-2834.

June 13–16 Online Publishing '94. New York, NY Graphic Communications Association. Call: (703)519-8160.

June 13–16 SunWorld San Francisco. San Francisco. World Expo Corp. Call: 1-800-225-4698.

June 16–18 Art Teco '94: First Annual United Developers Summit. San Francisco. Morph's Outpost on the Digital Frontier. Call: (510)238-4550.

June 18–19 Computer Show And Sale. Solano County Fairgrounds, Vallejo. MarketPro. Call: (415)456-6730.

June 20–23 NeXTWorld Expo '94. San Francisco. DCI. Call: 1-800-767-2336.

June 20–24 Xhibition '94, Corporate Development Conference. San Jose Convention Center, San Jose. Call: 1-800-234-XHIB.

June 25–26 The Computer Show & Sale. Scottish Rite Center, Sacramento. MarketPro. Call: (415)456-6730.

CLASSES, SEMINARS, & WORKSHOPS

APRIL

April 30 Crosscultural Team Building Workshop. Santa Clara. UC Extension. Call: (408)748-7379.

April 30–May 14 Accounting For The Non-Financial Manager Class. Santa Clara. UC Extension. Call: (408)748-2117.

April 30–May 14 Introduction To Computers In Business Class. Santa Clara. UC Extension. Call: (408)748-2117.

MAY

May 1 Intermediate QuickBooks/PageMaker/Freelance Graphics Class. San Jose. Infomind. Call: (408)243-1121.

May 2 Advanced Excel 4.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 2 Basic Lotus Notes Concepts Class. San Francisco. Infotec Training Institute. Call: 1-800-282-7990.

May 2 Beginning FileMaker Pro Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 2 FileMaker Pro For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 2 Introduction To DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 2 Introduction To Lotus 1-2-3 2.4 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 2 Introduction To PC/Windows Class. San Jose. Infomind. Call: (408)243-1121.

May 2 Lotus Notes System Administration I Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 2 Microsoft Access Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 2–3 Introduction To Microsoft

Continued

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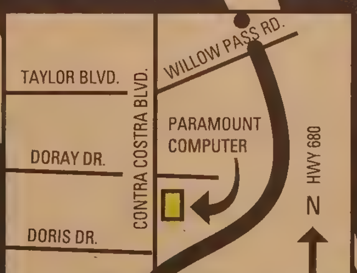
- Mini Tower Case w/230W P.S.
- 101 Enhanced Keyboard
- Microsoft Compatible 3-Buttons Mouse



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Maxtor 7245A 250MB IDE 14ms	$229
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Maxtor MXT-540A 540MB IDE 8.5ms	$395
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Quantum LPS-270A 270MB IDE 12ms	$226
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NEC 5FGe 17" 1024x768 .28dpi	$1035
NEC 5FG 17" 1280x1024 @74Hz .28dpi	$1295
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Bus Logic BT545KT Bus Master	$210
Promise DC4030VL-II IDE Cache Ctrl	$119
Vision 32Bit VL Bus IDE Ctrl. w/IO	$28
ISA IDE Ctrl. Card w/IO (1gm., 2srls	$15

PRINTERS

Canon B J-200e	$call
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HP Laser-Jet 4/4L/4M/4P/4ML	$call
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Toshiba 3401B SCSI-II 200ms 330Kb/Sec	$325
SOUND CARDS	
Creative Labs Sound Blaster 16 Basic	$118
Creative Labs Sound Blaster 16 Deluxe	$147
CL Sound Blaster 16 MCD/w ASP	$160/$192
CL Sound Blaster 16 SCSI-II/w ASP	$182/$204
Creative Labs Wave Blaster	$178
Diamond Sonic 16	$105
Media Vision Pro 16 Basic	$109
Media Vision Pro Audio Spectrum 16	$129
Media Vision Pro Audio Studio 16	$157
Orchid Game Wave	$144
Orchid Sound Wave	$192

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9GXi Level 29 4MB VRAM 1MB DRAM	$1375
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Celsius VLB 1MB/2MB VRAM	$198/258
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USRobotics Sportster 14400bps Internal	$125
USRobotics Sportster 14400bps External	$154
Zoltrix 14400bps Internal Fax/Modem	$110
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Calendar Of Events *continued*

Windows For New Users Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 2–6 ISO 9000 Assessor/Lead Assessor Training Seminar. San Jose. Perry Johnson, Inc. Call: Tom Parker, 1-800-479-2020.

May 2, 17, 20, 24 Microsoft Office Classes Special. Oakland. California Computer Options. Call: (510)444-5700.

May 3 Beginning Illustrator Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 3 Intro To The Mac Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 3 Introduction To PageMaker 5.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 3 Introduction To Windows 3.1 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 3 Introduction To Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 3 The $79 Network Free Seminar. San Francisco. Network Services Group. Call: (415)863-8407.

May 3 TMS320C3X Design Workshop. San Jose. Texas Instruments Call: (408)383-2363.

May 3 Visual Basic Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 3 & 5 Beginning PageMaker Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 3 & 5 Microsoft Excel For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 3 & 5 PageMaker For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 3–26 AutoLISP Introduction Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 3–June 28 Graphic Design 2: Techniques Class. Santa Clara. UC Santa Cruz Extension. Call: (408)427-6620.

May 4 Beginning DOS Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 4 Beginning Word Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 4 Intermediate Access For Windows 1.1 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 4 Introduction To Freelance Graphics For Windows 2.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 4 Introduction To Lotus 1-2-3 For DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 4 Introduction To Lotus Notes For Windows 3.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 4 Introduction To Microsoft Excel Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 4 Lotus Notes System Administration I Class. San Francisco. Infotec Training Institute. Call: 1-800-282-7990.

May 4 Microsoft Word For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 4 Multimedia Studies Program Information Session. San Francisco. SFSU Extended Education. Call: (415)904-7700.

May 4–5 Beginning Photoshop Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 4–5 Introduction To Corel Draw 4.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 4–June 1 Ethical Issues For The Environmental Professional Course. Santa Clara. UC Extension. Call: (408)748-7380.

May 4–July 13 Introduction To Air Quality Modeling Class. Santa Clara. UC Extension. Call: (408)748-7380.

May 5 Beginning PowerPoint Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 5 IBM PC Clone Hardware Hands-On Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

May 5 Intermediate Microsoft Excel Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 5 Intro To PC Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 5 Introduction To Ami Pro 3.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 5 Introduction To WordPerfect 6.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 5 Introduction To WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 5 Lotus Notes System Administration II Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 5–26 Public Relations In High Tech Markets Class. Santa Clara. UC Extension. Call: Tony Ybarra, (408)748-2950.

May 5–June 2 Reward And Recognition: A Key Element In Quality Initiatives Class. Santa Clara. UC Extension. Call: Mary Rimovsky, (408)748-2117.

May 5–June 16 Nonlinear Editing With Adobe Premiere Class. Santa Clara. UC Santa Cruz Extension. Call: (408)427-6620.

May 6 Beginning Excel Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 6 Charting, Presentation Creation, And Macros With Microsoft Excel Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 6 Introduction To Access For Windows 1.1 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 6 Introduction To Lotus Approach 2.1 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 6 Macintosh Network Administration Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 6 Microsoft Excel For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 6 Paradox For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 6 & 20 Process Redesign And Reengineering Class. Santa Clara. UC Extension. Call: Mary Rimovsky, (408)748-2117.

May 7 CNE Hands-On Study Group. Oakland. Excel Micro Solutions. Call: (510)

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540 MB SCSI Maxtor MXT-540SL	$525
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CD ROM / SOUND CARDS

Sony CD 31A W/ interface card	$145
Toshiba XM-3401B SCSI 200ms	$325
Panasonic Double Speed CP-562	$185
NEC Tripple Speed 3XI SCSI 195ms	$485
ProAudio Spectrum 16 / Studio 16	$140/170
Sound Blaster 16 / SB 16 ASP SCSI	$155/200

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PENTIUM 586 PCI + ISA W/256K CACHE	$390
PENTIUM EISA 586 PCI + EISA BUS	$560
AIR 486 VLB ISA w/256K 33/50Mhz	$165
AIR MIS VLB + SCSI + IDE W/256Kcache	$305
Dash 486 VLB ISA w/256K 33/50Mhz	$135

PRINTERS

Panasonic KX-2180/2123	$160/240
Deskjet 1200C/Postcript	$1375/1975
Deskjet 500/500C/550C	$295/395/585
HP Laserjet 4/4M/4L/4ML	$1365/1865/669/1025

FLOPPY DRIVE/TAPE BACKUP

TEAC 1.2MB 5.25	$48
TEAC 1.44MB 3.5/ WFrame	$38/42
TEAC Dual Floppy Drive 1.2 & 1.44MB	$105
Colorado Tape Backup 120MB	$145
Colorado Tape Backup 250MB	$175
Archive 250MB Tape Backup Floppy Con.	$160

NETWORK CARD / SOFTWARES

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3C503-16 Etherlink II 16 bit coax/TP	$170/180
3C509-16 Etherlink III 16 bit coax/TP	$135/140
COMPULAN	
NE 600E 16 bit TP	$75
NE 200E 16 bit Coax	$65
NOVELL CARDS	
NE2000 16 bit Coax	$130
NE2000 16 bit TP	$135
NOVELL SOFTWARE	
Netware 3.12 for 5/10/20 Users	$595/1290/1895
Netware 4.01 for 5/10/20 Users	$820/1820/2630

SCANNERS

ScanJet IICX Color w/ Kit	$985
ArtiScan Scanner 600/800/1200	$815/915/1185

SOFTWARES

Personal Netware Software	$85
Microsoft DOS 6.2	$40
Microsoft Windows 3.1	$50
CD ROM Softwares	$Call

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Viewsonic 15 15" 0.28DP	$489
Viewsonic 17 17" 0.28DP	$1035
Viewsonic 20 20" 0.28DP	$1720
Viewsonic 21 21" 0.26DP	$2050
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Mag 17F 17" 0.26DP SVGA Monitor	$885
SONY 1430 14" 1024x768 0.25DP	$595
SONY 1730 17" 1024x768 0.25DP	$995
SONY 17SE 17" 1600X1200 .25DP	$1175
SONY 2036 20" 1280x1024 0.30DP	$2295

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Trident 512k Card/ Trident 1MB card	$45/70
16Bit 1 MB Tseng-4000 72Hz 32K Color	$75
Cirrus Logic VLB 1MB/2MB	$95/135
Trident VLB Plus1MB/2MB	$85/130
Number 9 GXe Level 11 2MB ISA/VLB	$355/360
Number 9 GXe Level 12 3MB ISA/VLB	$435/440
Fahrenheit VLB Bus1MB/2MB	$165/190
Orchid Fahrenheit VLB VA 1MB/2MB	$195/235
Orchid Celsius VLB 1Mb/2MB	$215/275
Diamond Speedstar Pro 1MB	$110
Diamond Stealth 24 VLB 1MB	$155
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Diamond Viper VLB 2MB Weitek Chipset	$365
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AIR Star-2000 VLB Weitek Chipset 2MB	$360
ATI Ultra Pro VLB 2MB	$365
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Zoltrix 2400 Internal Modem	$30
Zoltrix 9600/2400 Fax/Modem	$50
Zoltrix 14.4K V.32 bis, V.42 bis I/E	$125/175
US Robotics Sportster 14.4K I/E	$165/185
US Robotics Courier HST Dual Standard	$Call
Intel SatisfaxtionModerm/400e I/E	$385/400
Intel Fax/Moderm 14.4K I/E	$165/195

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Promise DC-2000 VLB IDE& I/O	$35
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DTC 2270VL VLB IDE & I/O Fast	$75
Promise DC-4030VL IDE VLB CACHE	$135
Adaptec 1522B/1522B Kit SCSI	$85/140
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Adaptec 2842 VLB Fast SCSI-2 Kit	$285
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Ethernet NE2000 16 Bit Adaptor	$55
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Trantor T130 SCSI Interface w. Kit	$ 50
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ULtrastor 34F VLB SCSI	$265
BusLogic BT445S VLB SCSI-II	$260
BusLogic BT545K BusMaster SCSI	$235

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Calendar Of Events *continued*

836-2040.

May 7–8 Multimedia And Desktop Video Class. Santa Clara. UC Santa Cruz Extension. Call: (408)427-6620.

May 9 Beginning QuarkXPress Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 9 Introduction To Harvard Graphics For Windows 2.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 9 Introduction To Word For Windows 2.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 9 Introduction To Word For Windows 6.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 9 Quark For Windows Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 9–10 Quark Project Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 9–13 ISO 9000 Assessor/Lead Assessor Training Seminar. San Francisco. Perry Johnson, Inc. Call: Tom Parker, 1-800-479-2020.

May 10 Advanced Macintosh Techniques Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 10 Intermediate Lotus 1-2-3, 2.4 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 10 Internet: Productivity Tools For Office Automation Free Seminar. San Francisco. Network Services Group. Call: (415)863-8407.

May 10 Introduction To PowerPoint 3.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 10 Introduction To Quattro Pro 5.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 10 Introduction To Word For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 10 Microsoft Access Part 1 Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 10 TMS320C3X Design Workshop. San Jose. Texas Instruments. Call: (408)383-2363.

May 10 TMS320C3X Design Workshop. Irvine. Texas Instruments. Call: (408)383-2363.

May 10 WordPerfect For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 10 & 12 Beginning DOS Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 10 & 12 Beginning QuarkXPress Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 10–12 Interactive Filmmaking Part I: Structures And Techniques, The Writer Class. San Francisco. SFSU Extended Education. Call: (415)904-7700.

May 10 & 12 Microsoft Word For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 10–13 CAD/CAM With AutoSURF & AutoMILL Class. Santa Clara. The Copper Connection. Call: (408)970-9838.

May 10–13 Introduction To AutoCAD Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 11 Beginning Persuasion Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 11 Introduction To DOS 6.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 11 Introduction To Paradox For Windows 1.0/4.5 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 11 Introduction To WordPerfect For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 11 Lotus 1-2-3 For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 11 Persuasion For Windows Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 11 What's Coming Up With Windows Free Presentation. San Francisco. SFSU Extended Education. Call: (415)904-7700.

May 11–12 Photocentric Photoshop Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 11–13 Novell System Manager Class. Oakland. California Computer Options. Call: (510)444-5700.

May 12 Interactive Filmmaking Part II: Structures And Techniques, The Filmmaker Class. San Francisco. San Francisco State Extension. Call: (415)904-7700.

May 12 Intermediate Excel Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 12 Intermediate WordPerfect For Windows 5.2 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 12 Introduction To Excel For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 12 Introduction To Quattro Pro For Windows 5.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 12 LAN Fundamentals Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 12 Lotus Notes System Administration II Class. San Francisco. Infotec Training Institute. Call: 1-800-282-7990.

May 12 See What TeleMagic Can Do For Your Sales Free Workshop. San Francisco. J.C. Lukrich & Co. Call: (415)905-6900.

May 12–13 PC Repair 2-Day Hands-On Workshop. Oakland. Excel Micro Solutions. Call: (510)836-2040.

May 12–15 Interactive Filmmaking Part II: Structures And Techniques, The Filmmaker Class. San Francisco. SFSU Extended Education. Call: (415)904-7700.

May 13 Advanced FileMaker Pro Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 13 FileMaker Pro For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 13 Intro To Mac Networks Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 13 Introduction To cc:Mail For Windows 2.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 13 Introduction To Paradox For DOS

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Kelvin 64-VLB	$179
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T560i 17" 1280 .25 NI	$1635
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PCMCIA 14.4 Fax Modem	$315
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Us Sportster V.32 Bis Ext.	$145
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Zyxel	
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U-1496+ 14.4 S/R Fax Ext.	$595

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AHA-2742T SCSI EISA	$379
AHA-2842VL SCSI	$359
AHA-1542C 7HD 2FD	$180
Buslogic	
BT-445S VL SCSI	$249
BT-747S SCSI EISA	$319
DTC	
3270 VL SCSI	$135

Network

3Com	
3C503 Etherlink II 16 bit coax / TP	$169 / 179
3C509 Etherlink III coax / 5 pack	$125 / 555
3C509 Etherlink III TP / 5 pack	$122 / 545
3C509 Etherlink III combo / 5 pack	$145 / 595
Artisoft (Lantastic)	
AI Software 5.0 Win / 6pk / 12pk	$85 /450 /795
Lantastic 6.0 single / 5 / 10	$85 / 356 / 640
Simply Lantastic Starter Kit / Add On	$213 / 107
Intel	
EtherExpress Flash LAN TP / 5 pk	$122 / 583
EtherExpress coax / 5 pk	$108 / 485
Ether Express 16C combo / 5pk	$128 / 612
Boot ROM for Netware	$29
Harmonica Adapter 12 TP to 50 pin telco	$50
SMC	
Ethercard Plus Elite 16 coax / 6 pk	$125 / 625
Ethercard plus Elite 16 combo / 6 pk	$149 / 775
Elite Ultra 16 coax / 6 pk	$110 / 595
Elite Ultra 16 combo	$129
Netware boot ROM for Ethernet	$34
PC130 ARCnet 8bit	$71
ARCnet HUB (passive)	$62
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Transceiver AUI to TP	$109
Transceiver AUI to Fiber	$350
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Connor 2525S SCSI 525 Mbyte	$539
Archive 4mm DAT	$1092
Exabyte 4200c 4mm DAT	$986

Kingston Technology	
Transceiver RJ45 to AUI	$45
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16 bit RJ45 NE2000 compatable	$45
16 bit coax NE 2000 compatable	$56
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PN557R Starcontroller 12TP HUB	$1092
PN357R Starcontroller/12 12RJ11	$816
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PN844-1 Etherwave Newton adaptor	$306
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Calendar Of Events *continued*

Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 13 Introduction To Word For Windows 2.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 13 WordPerfect For DOS Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 14 A Business Tour Of The Internet Seminar. San Francisco. IIT. Call: (415)621-1908.

May 14 Building Software Sales Through Vertical Application Marketing Seminar. Lafayette. THEOS Software Corporation. Call: Jerry Myers, 1-800-600-5660.

May 14 Managing Telecommunication Networks Class. San Francisco. SFSU Extended Education. Call: (415)904-7770.

May 14 Roland Desktop CNC Mfg. Class. Santa Clara. The Copper Connection. Call: (408)970-9838.

May 14 Virtual Reality Seminar. Redwood City. Division, Inc. Call: (415)364-6067.

May 16 CAD Technology Preview Presentation. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 16 Intermediate Word For Windows, Version 2 Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 16 Introduction To Lotus 1-2-3, 4.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 16 Introduction To Paradox 4.0/4.5 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 16 Lotus Notes System Development I Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 16 WordPerfect For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 16 & 20 Macromedia Director Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 16 & 23 Release 12 Update Training Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 17 Beginning Excel Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 17 Ergonomics Panel. San Francisco. San Francisco PC Users Group. Call: Margery Blum, (415)931-3110 or 346-2644.

May 17 Field Programmable Gate Array Design Workshop. San Jose. Texas Instruments. Call: (408)383-2363.

May 17 Intermediate Lotus 1-2-3, 3.4 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 17 Intermediate Word For Windows, Version 6 Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 17 Introduction To Excel 5.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 17 Introduction To WordPerfect 6.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 17 Microsoft Excel For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 17 & 19 Beginning FileMaker Pro Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 17 & 19 FileMaker Pro For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 17 & 19 Intro To PC Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 17 & 19 Intro To The Mac Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 17 & 19 WordPerfect For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 17–20 Intermediate AutoCAD Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 18 ACT! For Windows Free Seminar. Oakland. California Computer Options. Call: (510)444-5700.

May 18 Intermediate Word Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 18 Intermediate Word For Windows 2.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 18 Intermediate WordPerfect For DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 18 Introduction To WordPerfect For Windows 6.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 18 Lotus Notes System Application Development II Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 18 Lotus Notes System Development II Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 18 Microsoft Word For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 18 Windows NT Tech Talk. San Jose. Center For Software Development. Call: (408)494-8378.

May 19 Advanced Illustrator Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 19 Beginning PageMaker Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 19 Intermediate Excel For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 19 Introduction To Excel 4.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 19 Introduction To Personal Computers Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 19 Introduction To WordPerfect For Windows 5.2 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 19 PageMaker For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 19 Sales Automation Seminar: How To Increase Sales By 30% With TeleSell. San Francisco. J.C. Lukrich & Co. Call: (415)905-6900.

May 20 Advanced PowerPoint Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 20 Intermediate Lotus For DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

May 20 Introduction To Lotus Organizer 1.1 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 20 Introduction To Windows 3.1 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 20 PowerPoint For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 20 Quattro Pro For Windows Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 21 Voice And Data Integration: Case Study Class. San Francisco. SFSU Extended Education. Call: (415)904-7770.

May 21–22 Build Your Own CAD System Class. San Francisco. SFSU Extended Education. Call: (415)904-7710.

May 22 Computer Show & Sale. Marin Civic Center. MarketPro. Call: (415)456-6730.

May 23 ACT! For Windows Class. Oakland. California Computer Options. Call: (510)444-5700.

May 23 Advanced Excel Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

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- Local Bus IDE Controller
- 2 Ser,1 Parr,1 Game Port
- Microsoft Serial Mouse
- 101 Key Enhanced Keyboard
- Tower or Desktop Chassis
- 200W Power Supply
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- Microsoft DOS 6.21

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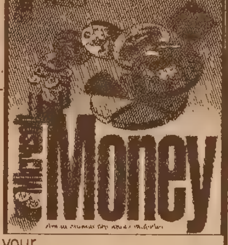

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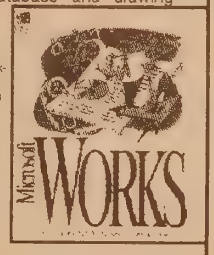

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Calendar Of Events continued

May 23 Advanced Photoshop Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 23 Basic Lotus Notes Concepts Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 23 Intermediate Excel 4.0 Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 23 Intermediate Paradox For Windows 1.0/4.5 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 23 Lotus Notes System Application Development I Class. San Francisco. Infotec Training Institute. Call: 1-800-282-7990.

May 23 Lotus Notes System Development I Class. San Francisco. Infotec Training Institute. Call: 1-800-282-7990.

May 23–24 CorelDRAW Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 23, 25, 27 & June 1 Principles And Practices Of Marketing Class. Santa Clara. UC Extension. Call: (408)748-2117.

May 23 & 26 Introduction To DataEase 4.2 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 23 & 26 Introduction To Project For Windows 3.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 24 Advanced PageMaker Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 24 HRVantage Overview Seminar. San Francisco. Spectrum Human Resource Systems Corp. Call: 1-800-477-3287.

May 24 Intermediate Lotus 1-2-3 For Windows 4.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 24 Intermediate Windows 3.1 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 24 Introduction To Word For Windows 6.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 24 MacProject Pro Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 24 Margin Analysis For LAN Dealers Seminar. Oakland. Business Technology Association. BTA, c/o BBS, 2258 Santa Clara Ave. #3, Alameda, CA 94501.

May 24 M*A*S* 90 Core Module Training/Overview Class. San Francisco. J.C. Lukrich & Co. Call: (415)905-6900.

May 24 Microsoft Access Part 2 Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 24 PageMaker For Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 24 TMS320C5X Design Workshop. Irvine. Texas Instruments Call: (408)383-2363.

May 24 & 26 Beginning Excel Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 24 & 26 Intermediate Excel Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 24 & 26 WordPerfect For DOS Level I Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 25 Advanced Word Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 25 Excel Macros Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 25 Free AutoCAD Information Session. San Francisco. SFSU Extended Education. Call: (415)904-7700.

May 25 Intermediate Paradox 4.0/4.5 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 25 Intermediate Word For Windows 2.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 25 Introduction To PageMaker 5.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 25 Introduction To WordPerfect 5.1 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 25 Microsoft Excel Macros For Windows Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 25 Multimedia Studies Program Information Session. San Francisco. SFSU Extended Education. Call: (415)904-7700.

May 25 Windows Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 25–26 Ed Yourdon On Object-Oriented Analysis And Design Seminar. San Francisco. DCI. (508)470-3880, 9 am–5 pm Eastern Time.

May 26 Advanced QuarkXPress Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 26 Intermediate WordPerfect 6.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 26 Lotus Notes System Application Development II Class. San Francisco. Infotec Training Institute. Call: 1-800-282-7990.

May 26 Lotus Notes System Development II Class. San Francisco. Infotec Training Institute. Call: 1-800-282-7990.

May 26 Microsoft Access Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 26–27 Microsoft Project For The Mac Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 26–27 Microsoft Project For Windows Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 27 Advanced Paradox For Windows 1.0/4.5 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 27 Intermediate Quattro Pro For Windows 5.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 27 Intermediate Word For Windows 6.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 27 Microsoft Access Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 30 Macromedia Lingo Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 31 Advanced Excel 5.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 31 Advanced Word For Windows 2.0 Class. Santa Clara. The Dublin Group, Inc. Call: 1-800-464-8344.

May 31 Beginning QuarkXPress Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 31 Intermediate DOS 6.0 Class. San Francisco. The Dublin Group, Inc. Call: 1-800-464-8344.

May 31 Lotus Notes Technical User Class. Santa Clara. Infotec Training Institute. Call: 1-800-282-7990.

May 31 Quark For Windows Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 31 WordPerfect For DOS Level II Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 31 & June 2 Beginning Illustrator Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 31 & June 2 MacProject Pro Class. San Francisco. Ciber Training Services. Call: (415)281-6100.

May 31, June 14 & 28 Exploring Opportunities In Multimedia Class. San Francisco. SFSU Extended Education. Call: (415)904-7700.

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MULTI-ZONE

Graveyard Shift BBS. (415)397-1038, (510)526-2338. 14,400. 100% adult files, Throbnet, Swingnet, Wildcat 3.9 RIP, 8 lines. [Exp. #124.]

Interactions BBS. (415)469-5510, (510)832-0560. 12 lines, friendly chat, over 18 only. Additional numbers from Lafayette to Fremont. Free trial period. Sysop: C. Watson. [Exp. #123.]

Lambda. (415)572-2591, 755-9439, 364-9049; (510)268-9891. Adult, gay/lesbian, all welcome, chat, matching, voicemail. Free trial. [Exp. #124.]

Nasty Playmates. (408)374-2627, 254-4221; (415)903-0898, 367-6283; (510)713-0703, 276-5446. 32 lines of naughty fun. Adult chat, matchmaker, personal ads, X-forums and file areas. Over 18 only. [Exp. #122.]

209

The Haunted Castle BBS. (209)826-1900. 2.3 Gig, 10,000+ files online, echo mail, multimedia, GIFs, games, and more. Since 1989. Sysop: David Clifford. [Exp. #122.]

408

#1 Fun Seekers. (408)379-0958. 8-N-1, 24 hrs., 14,400. RIP graphics, IBM files for all ages. Adult too. Four lines. [Exp. #123.]

Amateur Action BBS. (408)263-3393, 14,400; (408)263-1868, 21,600. 8-N-1. Adult amateur GIF files, 40 lines. [Exp. #124.]

Autos Online. (408)356-1306, 356-3866, 358-2010. 1200–14,400. Shop new car dealers, images, equipment. Use car locator service. Free. [Exp. #124.]

BayNar-Net. (408)926-8547. 24 hrs., 14,400. Model rocketry, IBM programs, family oriented, NAR affiliated. Sysop: Phil Hayton. [Exp. #124.]

Burn This Flag. (408)363-9766. 14,400. Female callers encouraged to call, two lines. NIRVANAnet. [Exp. #123.]

The Career Network BBS. (408)292-1675. 8-N-1, 5:30 pm–1:30 am, 1200–2400. Hundreds of JOBS! JOBS! JOBS! throughout the US. Your resume can reach 200+ employers monthly. Sysop: Steven McCormick. [Exp. #124.]

Careers Online. (408)257-1954. 1200–9600. Online job database. Free to all job seekers. [Exp. #124.]

The Checkered Demon BBS. (408)264-9018. 8-N-1, 24 hrs., up to 14,400. Comic, fantasy, and RPG BBS! Focus on Hero Games products. Sysop: John Taber. [Exp. #124.]

Claris BBS. (408)987-7421. 8-N-1, 14,400. Accessible by both Mac and PC/Windows machines, example files for download, upload files to Technical Support, send email to other users. [Exp. #123.]

Comp-U-Ease. (408)286-8332. 28,800. Multiline, RIME email regional HUB, engineering, ACAD, soccer, English news daily. Sysop: Stuart Smith. [Exp. #124.]

Dads & Kids. (408)998-3237. 14,400. IBM and Mac. Fathers' civil rights, custody, legal, counseling, second families, men's groups, and more. Sysop: Ted Bohrer. [Exp. #124.]

Data Vortex Comm. BBS. (408)685-1502. 8-N-1. WorldLink, Usenet, and local forums; games; free Internet email; files; nightly chat—link w/200+ systems. High-speed lines! Sysop: Michael Welch. [Exp. #124.]

Escape To Other Worlds BBS. (408)956-1750. 8-N-1, 14,400. Four lines. SF/fantasy/comics, RIME, FIDO, chat, shareware, adult files, 2GB. [Exp. #124.]

Laser Light BBS. (408)365-7778. 8-N-1, 24 hrs., 1200/2400/9600/14,400. All the latest and greatest game files. Sight/sound files also. Sysop: Rob Mueller. [Exp. #124.]

The Meating Place BBS. (408)926-6174. 24 hrs., 14,400. Gay/Bi, nine lines, email, chat, matchmaker, GIFs, and more. System password: Micro. [Exp. #122.]

Megamedia Multimedia BBS. (408)428-9901, 428-9926. 24 hrs., 2400–28,800. 7+GB of files, multimedia, Windows NT, and more. Msg. networks. Download files on first call. Sysop: Raaj Menon. [Exp. #124.]

Metals West BBS. (408)946-0334. 24 hrs., 2400–14,400. Tons of electronic scrap, PC hardware, test equipment, and more. ANSI and RIP support. Free with verification. Sysop: Geoff Lyman. [Exp. #124.]

Mongoose BBS. (408)733-3034. 24 hrs., 14,400. Two lines. USR HOST DUAL SmartNet, over 4GB of the latest shareware on CD-ROM. Free. Sysop: Robert Yagmourian. [Exp. #124.]

Monterey Gaming System. (408)655-5555. 14,400 on all 28 lines. Free Internet email, live chat, contests, games. Free. [Exp. #124.]

The Mountain Mist BBS. (408)353-4866. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Local and Intelec email. PCBoard 15.0/2. Specializing in legal files. OS/2, games, Windoze, Native Am., and other general interest files. Sysop: Christina M. Capurro. [Exp. #123.]

Paradise City BBS. (408)280-6630. 1200–57,600. Over 35,000 newest IBM and adult files, RIP EGA graphics, mouse support, email, games. Free full access on first call. Sysop: Jim Reed. [Exp. #124.]

The Silicon Matchmaker. (408)492-9700. 24 hrs., 14,400. 20 lines, email, chat, Internet mail, personal introductions. [Exp. #124.]

The Source BBS. (408)946-6000. 24 hrs., 14,400. 15,000+ files: Windows, DOS, programming, graphics, GIFs, UNIX, NT, games, text, word processing. Free. Sysop: Tom Dillon. [Exp. #123.]

The Support Network BBS. (408)259-0297. 8-N-1, 2–8 pm. 14,400. Assistive Technology info, large selection of educational files. Now with RIP graphics. Sysop: Frank Arnold. [Exp. #123.]

Thunder Mountain BBS. (408)266-4553. 8-N-1, 1200–14,400. Eight lines, chat, matchmaker, files, games, CD-ROM. Family oriented. Free. [Exp. #124.]

The Virtual Reality BBS. (408)246-5434. 8-N-1, 14,400. Games, files, and Net mail. Free. Sysop: Jim Busby. [Exp. #123.]

The Warped Disk. (408)288-6890. 14,400. Four lines, files, CD-ROM, chat, forums, photo database, adult areas, RIP graphics, free RIPterm. Free. Sysop: Woody Musson. [Exp. #124.]

415

Anatomically Correct BBS. (415)856-8425. 24 hrs., 14,400. Adults only, discussions of adult issues, more than 100 X-rated stories. Massage parlor guide, "Cheri Chat" and "Horrorscope" doors. No GIF files. Free. Sysop: Howeird. [Exp. #124.]

A.S.D.I.P. (415)468-3886. 14,400. We are new, deal in adult issues, and offer a free test drive! Three lines, over 8GB online. [Exp. #122.]

The Back Door v2. (415)756-6238. 28,800. 48 lines, adult and alternative lifestyles, Internet, health info, online games, and more. 18 and over only. [Exp. #122.]

Bay Area Luv Connection. (415)822-7550. 24 hrs. Adult board, 16 lines. Fee. Voice: (415)239-1028. Sysop: Ronnie Parker. [Exp. #122.]

Career Connections. (415)917-2129, 917-2125. 8-N-1. View and respond online directly to the recruiters. Telnet: career.com . Free. Sysop: S. Dave. [Exp. #123.]

Clipboard. (415)239-0454. 28,800. Clipper/IBM programming files, FidoNet, Intelec, Internet newsgroups,

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BAY AREA BBSes

By Kathleen Creighton

Talk Back To Your TV Online

Aaron Barnhart, producer of the weekly electronic newsletter *Late Show News*, reports:

"It's true: Lateshow@pipeline.com is the official Internet address of *Late Show With David Letterman.* Talent researcher Christine Schomer, who will be manning the new emailbox from her office in the Ed Sullivan Theater building, says the address was established to encourage suggestions and comments from you, the actual viewing audience, including

- guests you'd like to see more/less of; guests who should be on but haven't been;
- interesting/funny human interest stories from your corner of the world; and of course,
- ways to improve the show."

Aaron goes on to say that Schomer has asked that people stop sending requests for Kathie Lee appearances—they get the hint. Schomer also confirmed that she and other Worldwide Pants staffers do lurk on the Usenet group alt.fan.letterman and requests that folks keep posting and be honest about their feelings. (As though Usenet denizens can be stopped!)

Barnhart's *Late Show News* is one of the most entertaining electronic features to come down the pike, and reading it is a must for late-night TV viewers. If you have an Internet email address, you can subscribe by getting on the LATE-SHOW-NEWS distribution list. To get *Late Show News* in your mailbox every week, just send mail to listserv@mcs.net with this one-line message:

subscribe late-show-news

Late Show News is also available by anonymous FTP from ftp.mcs.net in the directory /mcsnet.users/barnhart/late-show-news . Redistribution prohibited without written permission of the author, with the exceptions that a single user (a) may retrieve *Late Show News* from the archive listed below by anonymous FTP, and (b) may send to another single user by electronic mail where an electronic mailing list such as Majordomo is not employed.

Barnhart can be reached at: barnhart@well.sf.ca.us .

TV Online

Since many of us are online to share common experiences, TV discussions, along with books and movies, are a natural. Prodigy, which until last year had always hosted huge TV boards, has done something interesting by soliciting the networks for an online representative for its TV Networks board. It's a great idea that will likely never get off the ground on Prodigy's expensive and nearly dead BBS areas, and suckering the membership unwittingly into a paying area with the headline "Tell TV Networks What You Think" doesn't help matters much.

Prodigy has somewhat redeemed itself, though, with the first online national TV listing (a CORE feature, no extra charge). You can search for programs by date, time, and network, or just get all of the listings for the Discovery Channel, for instance, for one day. Program times for shows on CBS and FOX are not exactly in synch with the Bay Area's schizophrenic prime time schedule, but if you're aware of that quirk, you can make allowances.

Talk Back To Geraldo?

A couple of cable networks and two syndicated shows have made their way to America Online. Court TV, CSPAN, and the Sci-Fi Channel have set up shop on America Online, complete with viewing schedules and message areas. In addition, CSPAN has some transcripts available.

If those are too tame, perhaps *Geraldo* or the *Ricki Lake Show* are looking for you. They also have message areas on AOL. Ricki Lake has finally taken to mentioning the

Continued

BBSes continued...

and doors. Sysop: George Jereza. [Exp. #122.]

Fog City. (415)863-9697. 8-N-1. Gay & lesbian community/chat, matchmaking, CD-ROMs, games, multiline, 2.4GB. Since 1986. [Exp. #124.]

Global Trade Net. (415)668-0422. Devoted to facilitating international trade theory and practice. Job Bank and Business development areas. [Exp. #122.]

Golden Gate Computer Society BBS. (415)457-2516. 24 hrs., 2400–14,400. Four nodes; ILink, Cal-Link, and Usenet. Downloads OK during first call. [Exp. #124.]

!Great Divination! (415)327-6748. 8-N-1, 2400. The greatest multiplayer online game, Sorcery. Warning: Addictive. Free trial. Sysop: Gendflor Silvren. [Exp. #123.]

Hotline Computers BBS. (415)349-5136. 14,400. Computer users subjects, 2.5+GB files, classifieds, online shopping. Free. [Exp. #124.]

IBBS West. (415)564-9996. 8-N-1, 24 hrs., 300–14,400. Five lines, PC & compatibles, Internet mail, shareware, utils., adult GIFs, two CD-ROMs, 13,000. Fee. [Exp. #124.]

InfoDude Communications. (415)855-9500. 14,400. Multiplatform BBS supporting IBM, Mac, and Amiga; chat, files, PC-SIG online. [Exp. #123.]

The Informer BBS. (415)468-6713, 468-6714, 468-6715. 24 hrs., 2400–28,800. Intelec, FamNet, WildNet, Fido, OS/2 net operating systems, tech specs, and more. Sysop: John Custer. [Exp. #124.]

Key Software Products BBS. (415)364-9847. 5 pm–8 am M–F, 24 hrs. wknds. 1200/2400/9600. Tech support for the Last Byte Memory Manager. Internet email, fax-mail. Free. Sysop: Dan Lewis [Exp. #124.]

LegalNet. (415)454-0772. 14,400. The California legal community is now online at 14.4 and $6/month. [Exp. #123.]

Marin Online. (415)457-1884. 14,400. The online community of Marin. Sysop: James Preston. [Exp. #123.]

The MIDI & Multimedia Exchange BBS. (415)771-1788. Music and multimedia and virtual reality data files and programs; .MOD, .MID, etc. Sysop: Walt Perko. [Exp. #124.]

Near Side BBS. (415)369-5063. 14,400. Software support, online games, growing transfer sections. Reg. requested. [Exp. #122.]

New Dork Sublime. (415)864-DORK, 255-NERD. 14,400. As seen in the *National Enquirer*, two lines, NIRVANAnet. [Exp. #123.]

Recovery BBS. (415)255-2188. 8-N-1, 300/1200/2400. Dedicated to 12-step recovery programs. AA, NA, Al-Anon/ACA, SLAA. Recovery and 12-step Echos. Fido 125/9. Sysop: Rich Gorlin. [Exp. #122.]

The Road Not Taken. (415)648-8462. General conversation, discussion of current issues, miscellaneous blather. Free. [Exp. #123.]

Solar Hydrogen BBS. (415)494-3116. 24 hrs., 1200–14,400. Alternative energy info—prosperity without pollution. Sysop: Howard H. Smith. [Exp. #124.]

Springboard. (415)327-4591. 14,400. Eight lines, Reuters & AP news, Internet, live newstalk. Free 30-day trial. Sysops: Wendie, Mike, Lisa, Bob, and Scott. [Exp. #124.]

Starnet Of Los Altos. (415)949-3133. 8-N-1, 24 hrs., 300/1200/2400/9600. Email, UNIX, USENET, UUCP, compilers, public domain software. Local to most 408 areas. [Exp. #122.]

Symmetrics BBS. (415)382-6679. 8-N-1, 24 hrs., 1200–14,400. Online games, 600+MB of shareware programs. [Exp. #124.]

The Trade Center BBS. (415)340-0197. 24 hrs., 28,800. Five lines, patches for Flight Sims (Falcon3), adult files, 1.1GB, Internet mail, SimNet, RGSNet support, and more. Free, full access on first call. Sysop: Gabriel Turk. [Exp. #122.]

Uncle D's Directory. (415)364-3001. Computer online service for the mentally aroused. 1.5GB games, unprotects, RIME, classifieds, doors. [Exp. #123.]

/usr/school/BBS. (415)564-8896. 7-E-1, 24 hrs., 1200/2400. How to access the Internet, C & UNIX classes. If garbage, press space. Sysop: Dennis McMamara. [Exp. #122.]

VidGame BBS. (415)742-6486, 2400–16,800; 742-6618, 28,800. Six nodes, steamy adult GIFs, games, 7.5+GB/two CD-ROMs. Free Internet email and newsgroups. Sysop: George Hassmer. [Exp. #124.]

Window World BBS. (415)931-0649. 24 hrs. For people who use Windows-type software; info, shareware, chat. Sysop: Bob Cram. [Exp. #124.]

Wine-Tasters' Bulletin Board. (415)459-1948. 24 hrs., up to 14,400. Gigabyte stroll through the wines of the US. Wine country events and more. Instant access. [Exp. #124.]

510

& The Temple Of The Screaming Electron. (510)935-5845. 14,400. As seen on *Hard Copy*. 442MB of unusual text. NIRVANAnet HQ. [Exp. #123.]

8-Bit Apple User Group. (510)294-8052. 24 hrs., 300/1200/2400. Apple II support, email, messages, games, files. Free. Sysop: Noel Anklam. [Exp. #122.]

Activist. (510)532-6248. Lots of conspiracy text files—CIA, KGB, FBI, JFK, RFK, MLK, NSA, ADL, CFR, etc. Sysop: Walter Alter. [Exp. #123.]

Amiga Addicts Anonymous BBS. (510)680-2850. 8-N-1, 24 hrs., 1200–14,400. Amiga files only. Free. Sysop: Stanley R. Poland. [Exp. #124.]

Bay Area Mega Board. (510)247-8300, 12 lines @ 14,400; 247-8313, 4 lines @ 28,800. UltraChat, 26.7GB file area, GIFs, nets, games, news, magazines, weather, products for sale. Free and fee. Sysop: Sam Thompson. [Exp. #124.]

BayB—The Bay Area Baby Board. (510)528-8164. 14,400. Parenting issues and support: local events, classifieds, games, health, reviews. Mac/PC support. Free. [Exp. #123.]

Bayline BBS. (510)886-9401. 24 hrs., 14,400. Eight lines, African-American issues, Internet email and Usenet, business ads, personals,

BBS Column continued...

AOL presence at the end of her show. Greg Kinnear, the new host of *Later*, also makes use of AOL but NBC does not sponsor an area for him. By the way, *NBC Nightly News* has kept its nightly@nbc.ge.com address, and the NBC news magazine, *Dateline*, can be reached at dateline@nbc.ge.com . As far as we know, Kinnear, Leno, and O'Brien don't yet have their own Internet addresses.

Soaps

There's lots of TV discussion on all of the online services, but the most trafficked areas are probably the soap opera updates, where everyone can discuss the latest on *General Hospital* or *All My Children*. You can bet there are also many people who read these areas who are too embarrassed to post publicly, yet claim to watch only PBS.

Well, I watch more than PBS, but I and *MicroTimes* editor Mary Eisenhart can't get a good discussion going about our favorite soap operas—Channel 26's subtitled Japanese soaps, although we have found a couple of other enthusiasts on the WELL.

Cults On The Info Highway

I wonder what Al Gore would think if he knew that TV groups on Usenet heavily favored Ren 'n Stimpy (alt.tv.ren-n-stimpy) and the Simpsons (alt.tv.simpsons). There's rec.arts.tv, rec.arts.tv.soaps, and sci-fi fans have rec.arts.sf.tv, of course, but there are a number of specialized groups. Some of the more active are alt.tv.tinytoon, alt.tv.mst3k, alt.tv.seinfeld, alt.tv.northern-exp, alt.tv.babylon-5, and alt.tv.animaniacs. Enjoy!

Note To San Franciscans

I received a query from someone who wanted to know if there's an all-purpose BBS in San Francisco with easy access to Internet email for a novice BBS user. There are a few around the Bay Area, but I can't find one in San Francisco itself (and last I knew, PC Users Group BBS required the use of offline reader software to use Internet email). Any suggestions? My email address is: casey@well.sf.ca.us ■

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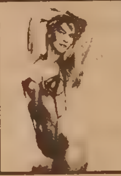

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BBSes continued...

games, and more. 10 hours free. Sysop: A. Mitchell. [Exp. #122.]

Callisto Tower BBS. (510)794-9788. 24 hrs., 14,400. LinkUSA, VampNet, TowerNet Hub. Lots of files and registered doors. Free. [Exp. #122.]

The Cat's Meow. (510)471-0603. 24 hrs., 300/1200/2400/9600/14,400. Supports 60 FidoNet and PCC Net conferences, such as parenting, health, and current events. Free. Sysop: Jim Rawlings. [Exp. #122.]

Caxius BBS. (510)895-6961. 24 hrs., 300–14,400. Technical focus, FidoNet & PCC Net support, 60+ msg bases, active debate forum. Free. Sysop: Ed Correia. [Exp. #124.]

Compu-Ace RBBS. (510)794-4029. 300/1200/2400/9600. FidoNet 1:215/739, BAY_LINK member. Files, games, msgs, and more. Sysop: Scott A. Mercer. [Exp. #122.]

Dr. Jack's Thing. (510)685-8522. 6:00 pm–8:00 am. 14,400. Lots of WAVs and GIFs, all the other stuff too. Thousands of new files, programs, utilities. Free/pay. [Exp. #124.]

For Sale By Owner. (510)689-9992. 14,400. MLS Services online, residential, commercial, land, foreclosures. Two lines. Free. [Exp. #122.]

Francofolies BBS. (510)651-3192. 14,400. Online CD-ROM sharewares, adult, FidoNet, and KinkNet. Reg. required, free. [Exp. #123.]

Fred Haney & Sons BBS. (510)792-5119. 8-N-1, 24 hrs., up to 14,400. Shareware software. Free. [Exp. #124.]

Gold Diggers BBS. (510)568-7807,,,23,23 (must include ,,,23,23 to get BBS). 24 hrs., 2400/9600/14,400/19,200. IBM, Atari ST, Amiga, Mac, files and messages. Registration $10 per year. Sysop: Harry Goldberg. [Exp. #122.]

The Golden Palace BBS. (510)237-5338. 24 hrs., 300–2400. Lots of msgs. and files, some online games, BADnet. Free. Sysop: Computer Wiz. [Exp. #124.]

The Hobby Shop BBS. (510)357-4125. 8-N-1, 28,800. Fun place to meet others; 800+MB adult scans, FidoNet: Free trial most areas. [Exp. #124.]

Initiative BBS. (510)654-2253. 8-N-1, 14,400. A political board featuring documents and discussion on the left in the US and the future of socialism. Free. Sysop: Steve Willett. [Exp. #123.]

The Lost Worlds BBS. (510)888-1714. Hot new BBS with over 1GB online, adult files and more. [Exp. #123.]

Maddog BBS. (510)483-0203. 24 hrs., 2400–14,400. 20,000+ DOS, Windows, OS/2 files. Adult GIF files. Online CD-ROM shareware, GIFs, etc. Free. Sysop: Troy Earp. [Exp. #124.]

Metropolis. (510)231-0353. 24 hrs., 2400/9600/14,400/19,200. DOS, Windows, OS/2 files; Apogee Software Creations distribution site; FidoNet. Sysop: Michael Chen. [Exp. #122.]

The New-Ark BBS. (510)796-0947. 24 hrs., 300/1200/2400/9600. Tradewars, running on two CD-ROMs. Reg. required. Sysop: Hiram Wolf. [Exp. #123.]

The Phantom Zone BBS. (510)538-9586. 8-N-1, 24 hrs., 300/1200/2400/9600/ 14,400. Two lines. Online games, offline mail reader, adult files, multinode. [Exp. #124.]

Planet Mirth. (510)786-6560. 14,400. Sinfully silly, Internet news, NIRVANAnet. [Exp. #123.]

Realitycheck. (510)527-1662. 14,400. Instant access, coffee, cigars, tech, and text. NIRVANAnet. [Exp. #123.]

Sequoia Online. (510)685-8388, 370-9345, 799-7809. Investing, tax, nutrition, photo, computer info, estate planning, email, and much more. Free. [Exp. #123.]

StarPort Valhalla. (510)522-3583. 24 hrs., 300/1200/2400/9600/14,400. Games, messages (five networks), programming, doors, political/religious debate. Free. [Exp. #123.]

T123 BBS. (510)373-0873. 24 hrs., 9600. Two lines, IBM/Mac files, messages, teleconferencing. Free access. Sysop: Corey L. Nelson. [Exp. #124.]

Terrapin Transit BBS. (510)644-9328. 14,400. Seven lines. IBM, Amiga, Mac, Atari. Internet email, Usenet. Games, downloads, chat. Sysop: Sam Lewit. [Exp. #124.]

Tiger Team Buddhist Information Network. (510)268-0102. 24 hrs., 14,400. "America's Buddhist Online Service," learn about Buddhism, find events and practice centers, and meet people with similar interests, four lines. [Exp. #122.]

VA Listings. (510)637-1261. 24 hrs., 300–9600. Multiline. VA-owned homes for sale. Sysop: David Piersall. [Exp. #124.]

Viper 1 Premium BBS. (510)535-0315, 535-0231. 1200/2400/9600/14,400. Multiline, 9000MB of storage, 5.2GB online, large adult file areas, games, image scanning service available. Sysop: Andre Porter. [Exp. #122.]

The Weasel Den II. (510)432-0204. 1200/2400. Lrg. assortment of netted msg. areas and topics, WeasNet, VirtualNet, CheapNet, DragonNet, AviationNet. Online games. [Exp. #123.]

Windows Online. (510)736-8343. Largest Windows BBS and publisher of WOL Review. Over 25,000 Win 3.x and 35,000 DOS files. Free limited trial. [Exp. #124.]

Wishing Well BBS. (510)745-7901. 1200/14,400. 85+ online games, quality files, ANSI art, RIP graphics, matchmaker, and more! Sysop: MaryLou White [Exp. #124.]

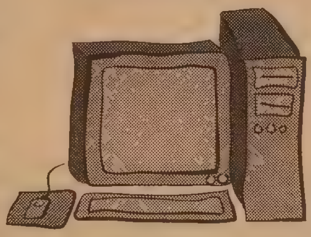
707

The Party Line BBS. (707)588-8055. 14,400. Eight lines, six CD-ROMs, Internet email and Usenet newsgroups, chat link, 1.2GB of MS-DOS and Mac files. Sysop: Jami Chism. [Exp. #124.]

Sonoma Online. (707)545-0746. 24 hrs. Seven CDs, 100+ conferences, Internet/UUCP mail. Unique alt. energy files. Free & fee. Sysop: Don Kulha. [Exp. #122.]

916

Intel Application Support. (916)356-3600. 24 hrs., 14,400. Technical files for designers using Intel components. 1-800-897-2536 master file list only. Free. Sysop: Franklin Wang. [Exp. #124.]



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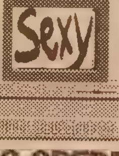

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USER GROUPS

ADOBE

Systems Adobe Technology Exchange. Meetings: 3rd Thurs., 6:30 pm, Ultradata Corp., 5020 Franklin Dr., Pleasanton. Call: (510)417-4185. [Exp. #122.]

AMIGA

AGA. Meetings: 7th of each month, downtown San Francisco. Graphics user group for 3-D/2-D, animators, multimedia, and videographers. Call: Ollie, (415)863-8792. [Exp. #123.]

AUM—Amiga Users Of Marin. Meetings: 3rd Wed., 7:30 pm, College of Marin Science Center, Rm. 191, Kentfield. Desktop Video SIG, Rm. 192, 6:00 pm. Call: (415)479-6717. BBS: (415)459-6621. [Exp. #126.]

AWEST Amiga Users In SF. Meetings: 2nd Wed., 6:30 pm, Excelsior Branch Public Library, 4400 Mission St. (near Ocean), San Francisco. Call: (415)584-8406. [Exp. #126.]

FAUG—First Amiga User Group. Meetings: 1st Tues., 7:30 pm, HT Electronics, 275 N. Matilda Ave., Sunnyvale. Q&A, new product demos, public domain software. Call: Mike Fisher, (415)855-9816; BBS: (415)341-7566; Usenet: mikef@vid.hp.com . [Exp. #122.]

RE—AMIGA Redwood Empire Amiga User Group. Meetings: 2nd Tues., 7:30 pm, Rohert Park Jr. HS, Rm. C-5, 7165 Burton Ave., Rohnert Park. Call: (707)523-9978. BBS: (707)539-6944. [Exp. #126.]

TOGA—The Other Group Of Amigoids. Meetings: Varying Sat., 12:30 pm, Milpitas Community Library, 40 N. Milpitas Blvd., Milpitas. An informal group to share ideas, PD software, and information. Call: Lawrence Brown, (408)984-6036; Randy Abel, (408)356-9405; toga@cup.portal.com . [Exp. #127.]

APPLE

PAUG—Peninsula Apple User Group. Meetings: 3rd Thurs., 7:00 pm, Ampex Cafeteria, 411 Broadway, Redwood City. Beginners and advanced, question and answer, new product demos, public domain software. Call: Kent Fillmore, (415)571-1433. [Exp. #126.]

SPC Apple User Group. Meetings: 2nd Tues., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to Apple Computers Users Group supports all Apple and Macintosh computers. Call: Dean Fearn, (510)881-9160. [Exp. #127.]

ATARI

Bay Area Atari Users Group. Meetings: 1st Mon., 7:30 pm, Agnews Aud., 2nd Fl., San Jose. Write: c/o 3691 Eastwood Cir., Santa Clara 95054. Call: Steven Lee, (408)988-3878. BBS: (408)986-0215. [Exp. #122.]

Northern California Atari Computer Enthusiasts. Meetings: 3rd Tues., 7:30 pm, Pac Bell Bldg., 3260 Sebastopol Rd., Santa Rosa. Call: Kim Remick, (707)795-8173. [Exp. #126.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm. San Leandro Public Library, 300 Estudillo Ave. 8/16/32-bit, SIGs. Call: Jim, (510)872-1244. [Exp. #122.]

CAD

Marin AutoCAD Users Group. Meetings: 1st Thurs., 6:30 pm, Eldeon Beck Associates, 171 Carlos Dr., San Rafael. Call: Gini Bollinger, (415)491-4722. [Exp. #122.]

SF AutoCAD User Group. Meetings: 1st Mon. Call: Mark Williamson, (415)383-4060. [Exp. #122.]

Southbay AutoCAD User Group. Meetings: Last Thurs. on even months, 6:00 pm. Food, prizes, and more. Call: Dean Villegas, (408)282-4448. [Exp. #126.]

COMMODORE

C=HUG (Commodore Hayward User Group). Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park. (510)531-3734. [Exp. #125.]

CWEST Commodore 64/128. Meetings: 2nd. Wed., 6:30–8:45 pm, Excelsior Library, 4400 Mission, San Francisco. San Francisco. Call: (415)626-9946. [Exp. #126.]

DEC

BayLUG. Digital Equipment Computer User's Society Local User Group. For users of DEC and other hardware. Call: Rich Taylor, (408)776-4978. [Exp. #127.]

DESKTOP PUBLISHING

BMUG Desktop Publishing And Design Sig. Meetings: 3rd Tuesday, 6:30 pm, SF Police Academy, 350 Amber St., San Francisco. Call: Les Cowan, (415)641-6033. [Exp. #122.]

Corel Ventura/Ventura Publishing User Group (San Mateo County VPUG). Meetings: 3rd or 4th Mon. (Sept.–May), 6:45 pm, 1800 Rollins Rd., Rm. 14, Burlingame. Call: Elinor Cruze, (415)366-5317. [Exp. #125.]

IBM AND COMPATIBLES

Berkeley PC User Group. Meetings: 2nd Tues., 7:00 pm, Winners Circle Systems, 2618 Telegraph Ave., Berkeley. No charge, newsletter $24/yr, free PD library, beginner SIG, GeoEnsemble SIG. Call: Mel Mann, (510)526-4033. [Exp. #122.]

EastBay FOG. Meetings: 2nd Wed., 6:30 pm, Episcopal Church of St. John-in-Montclair, 1707 Gouldin Rd., Montclair. All microcomputers, MS-DOS, CP/M. Call: (510)653-2627. [Exp. #127.]

Golden Gate Computer Society. Meetings: 4th Mon., 7:00 pm, San Rafael Community Center, 618 B St., San Rafael. Free intro to computers class at 6:00 pm. Call: (415)454-5556. [Exp. #124.]

Napa Valley PC Users Group. Meetings: 2nd Wed., 7:30 pm. Call: Lee Schwab (707)257-2675. [Exp. # 123.]

OS/2 BAUG Enterprise Computing SIG. Meetings: 3rd Mon., 7:00 pm, IBM, 425 Market St., 22nd floor, San Francisco. Call: Larry Baptist, (510)675-2466; Steve Burton, (510)686-1408. [Exp. #127.]

San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm. 110 Pacific #153, San Francisco. For those who use computers in business. Visitors $5. Call: Jordan Rosenberg, (415)788-5338. MCI Mail: 425-1545. [Exp. #127.]

San Francisco Computer Society. Meetings: 1st Mon., 7:00 pm, Presbyterian Church, 1329 7th Ave., San Francisco. Call: Bob Forsberg, (415)885-6202. [Exp. #123.]

San Francisco PC Users Group. Meetings: 3rd Tues., 6:15 pm SIGs, 7:30 pm General Meeting. St. Mary Cathedral, 1111 Gough St., San Francisco. Call: Kendall Callas, (415)821-1310; Loyd Cribbs, (415)751-5219; recorded events, (415)346-2644. [Exp. #127.]

South Bay WordPerfect User Group. Meetings: 4th Tues., Saratoga Community Library. Free. Call: Scott Maiden, (408)253-4591. [Exp. #124.]

Stanford Palo Alto Area PC User Group. Meetings: Last Wed., 7:30 pm, Varian Auditorium, 3075 Hansen Way., Palo Alto. Call: (415)329-8252. [Exp. #127.]

Terminal Transfer User Group. For Info, send S.A.S.E to Dave Blair, 2440 16th St., #171, San Francisco, 94103. Or Call: (415)431-7621. [Exp. #123.]

LAPTOPS HPX HP

Laptops & Handhelds. Meetings: 2nd Sat., 10:30 am, Sunnyvale. Call: Michael Felsenstein, (415)564-8279. [Exp. #123.]

LEGAL

SF Bar Assoc. WordPerfect User Group. Meetings: 3rd Wed., odd-numbered months, noon, SF Bar Assoc. Boardroom, 7th Fl., 685 Market St. Brown bag meetings. Call: (415)421-5650. [Exp. #123.]

MACINTOSH

A32 Macintosh User Group. Meetings: 2nd Sat., 10:00 am, Sunnyvale Community Center, 550 Remington Ave., Sunnyvale. Question and answer, guest speakers, disks-of-the-month, bimonthly newsletter, $35 annual dues. Call: (408)263-0398. [Exp. #122.]

AHUG—Apple HyperCard User Group. Meetings: 3rd Thurs., Apple Computer, Bldg. 4, 4 Infinite Loop Way, Cupertino. Meetings include speakers and topics for beginners and experienced HyperCard and AppleScript users. Call: (408)974-1707. [Exp. #126.]

Diablo Valley Macintosh User Group (DVMUG). Meetings: 3rd Tues., 7:00 pm, Bancroft School, multipurpose room, 2200 Parish Dr., Walnut Creek. Get together with Mac and Performa users. Enjoyable SIG meetings. Call: Connie, (510)827-5775. [Exp. #122.]

International Macintosh Users Group (IMUG). Meetings: 3rd Thurs., 7:00 pm. A forum for people using Macintosh computers in different languages. Call: Roger Sherman, (415)859-5146. [Exp. #127.]

Macintosh SIG. Meetings: 3rd Tues., 7:00 pm, Apple Cafeteria, City Center 4, De Anza and Rodrigues, Cupertino. Sponsored by Software Entrepreneurs' Forum. Call: Jeff Cherniss, (408)356-9901, or Barbara Cass (408)854-7219. [Exp. #126.]

PAUG—Peninsula Apple User Group. Meetings: 3rd Thurs., 7:00 pm, Ampex Cafeteria, 411 Broadway, Redwood City. Beginners and advanced, question and answer, new product demos, public domain software. Call: Kent Fillmore, (415)571-1433. [Exp. #126.]

Sequoia Macintosh Users' Group—SMUG. Meetings: 2nd week, 7:00 pm, Founders Hall, Rm. 118, Humbolt State University, Arcata. Call: (707)442-3520. [Exp. #127.]

SPC Apple User Group. Meetings: 2nd Tues., 7:30 pm, Fremont Main Public Library. The Society for Prevention of Cruelty to Apple Computers Users Group supports all Apple and Macintosh computers. Call: Dean Fearn, (510)881-9160. [Exp. #127.]

MARKETING

Marketing SIG. Meetings: 4th Thurs., 7:00 pm, Cubberley Community Center, Rm. H-1, 400 Middlefield Rd., Palo Alto. SIG of Software Entrepreneurs' Forum. Call: Bill Ryan, (415)615-7906. [Exp. #122.]

MULTIMEDIA

Macromedia User Forum. Meetings: 1st Wed., 7:00 pm, 600 Townsend, at 7th St., San Francisco. Authoring, 3-D, content, and tools. Call: (415)252-2295. [Exp. #122.]

North Bay Multimedia Association (NBMA). Meetings: 3rd Thurs., 7:00 pm, Semantic, Novato. Call: Lee Callister, (415)883-0449. [Exp. #122.]

SEF Multimedia SIG. Meetings: 1st Thurs., 7:00 pm, Center for Software Development, 111 W. St. John Street, Suite 200, Downtown San Jose. SIG of Software Entrepreneurs' Forum. Call: Ralph Gilman, (408)746-0551. [Exp. #127.]

NETWORKING

NetSIG. Meetings: 4th Tues., 7:00 pm, Novell Sunnyvale. Networking SIG for Software Developers. SEF group. Call: Skip Addison, (408)283-3545. [Exp. #122.]

NOVELL

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Sundowner Inn, 504 Ross Drive. Call: Stephanie or Beth, (408)522-8690. BBS: (408)739-8753. [Exp. #122.]

OS/2

OS/2 Bay Area User Group. Meetings: 4th Mon., 7:00 pm. For anyone interested in OS/2. Presentations, product demos, questions and answers. Call: (415)948-9186. [Exp. #127.]

PARADOX

Bay Area Paradox User Group (bapals). Meetings: 4th Tues., except June and July, 4th Wed., 4:30 pm, McKesson Bldg., 1 Post St., 18th floor, San Francisco. Call: (415)995-4688. [Exp. #122.]

PEN COMPUTING

Pen Software SIG. Meetings: 4th Wed., 7:00 pm, Cubberley Community Center, Rm. H-1, 400 Middlefield Rd., Palo Alto. SIG of Software Entrepreneurs' Forum. Call: Bill McAlpine, (415)348-2257. [Exp. #123.]

POINT OF SALE

Point Of Sale User Group. Meetings: 1st and 3rd Sat., 2025 E. 12th St., Oakland. Call: (510)216-9335. [Exp. #125.]

PROGRAMMING LANGUAGES

North Bay Forth Interest Group. Meetings: 2nd Sat., 1:00 pm, 2055 Center St., Berkeley. Tutorial at noon. Call: Leonard Morgenstern, (510)376-5241. [Exp. #122.]

SEF Visual Basic SIG. Meetings: 2nd Thurs., 7:00 pm, Cubberley Community Center, Rm. H-1, 4000 Middlefield, Palo Alto. Call: Allan Colby, (415)851-4657. [Exp. #127.]

Silicon Valley Forth Interest Group. Meetings: 4th Sat., 10:00 am–5:00 pm, 230 Lincoln Centre Dr., Foster City. Call: Dr. C.H. Ting, (415)571-7639. [Exp. #127.]

Visual BASIC SIG. Meetings: 2nd Thurs., 7:00 pm, Cubberley Community Center, 4000 Middlefield Rd., Rm. H-1, Palo Alto. Sponsored by Software Entrepreneurs' Forum. Call: Allan Colby, (415)851-4567. [Exp. #122.]

Visual C++ Bay Area Developer's Group. Meetings: 3rd Wed., 6:00 pm, Berkeley. For agendas, location, and RSVP, call: (510)254-9700, ext. 490. [Exp. #123.]

TEXAS INSTRUMENTS

TI-99/4A. Meetings: 2nd Sat., Oakland. Call: Fred, (510)530-8335. [Exp. #122.]

VIDEO TOASTER

Video Toaster User Group. Meetings: Last Thurs., 7:30 pm, HT Electronics, 275 N. Mathilda Ave., Sunnyvale. Special guests, equipment demos, hands-on workshops, plus info/tips on new System 3.0. Call: Andrew Timmins, (408)243-9233 (eve.). [Exp. #126.]

WINDOWS

BAWOW—Bay Area "Windows on Wall Street" User Group. For people interested in actively following the stock market using this revolutionary new software. Call: Dave Ittner, (510)796-4528. [Exp. #122.]

SEF Windows SIG. Meetings: 1st Wed., 6:30 pm, Cubberley Community Center, Room H-1, 4000 Middlefield Rd., Palo Alto. Software Entrepreneurs' Forum. $10 for nonmembers. Call: Fran Finnegan, (415)288-4400. [Exp. #127.]

ASSOCIATIONS

American Association For Artificial Intelligence. Meetings: Individuals interested in learning about the use and application of AI. Call: (415)328-3123, fax: (415)321-4457, email: membership@aaai.org. [Exp. #126.]

The Assembler Multitude. Meetings: 2nd and 4th Mon., 7:30 pm, University Lutheran Church, 1611 Stanford Ave., Palo Alto. An open discussion of new technical developments in many fields and how they relate to nanotechnology. Call: (408)974-6241. [Exp. #127.]

The Association For Customer Support Professionals (ACSP). Meetings: Quarterly. Dedicated to the development and furtherance of customer support as a distinct profession, to the growth of the support community, and to the improvement of support service. Call: (510)865-4515. Email: tao@well.sf.ca.us or 71333,2116@Compuserve.com . [Exp. #126.]

Association For Women In Computing. Meetings: 1st Wed., 5:30 pm, Sinbad's Restaurant, Pier 2, San Francisco Embarcadero. $15 members, $20 guests. Call: (415)979-8450. [Exp. #127.]

Association Of Information Systems Professionals (AISP). Write: 922 Weddell Ct., Sunnyvale, CA 94090. Forums, support, network for IS Professionals. Many SIGs. Call: Al Normantas, (408)745-7600. Fax: (408)745-0740. [Exp. #122.]

Black Data Processing Association, Silicon Valley Chapter. Meetings: 4th Thursday, 6:30 pm, Amdahl Corp., Bldg. H, 1240 E. Arques Ave., Sunnyvale. National network of DP professionals, educators, students, and vendor reps. Call: Willie Mackey, (408)280-7624. [Exp. #122.]

Business Marketing Association. Meetings: 4th Wed., 11:30 am, Marriott Hotel on Great America Pkwy., Santa Clara. A professional organization for business-to-business marketing professionals; CBC certification, topical programs, seminars, job bank. Call: (408)365-9815. [Exp. #127.]

Computer Professionals For Social Responsibility. Meetings: Last Sun., 2:00 pm, BMUG Offices, 2066 Center St., Berkeley. Call: (510)987-0567. Email: kec@stubbs.ucop.edu . [Exp. #123.]

Historical Computer Society. 10928 Ted Williams Pl., El Paso, TX 79934. A nostalgia group for enthusiasts of older computers and their history. Main forum is *Historically Brewed* newsletter; $18/yr., $3 sample. Call: David A. Greelish, (915)822-2683. [Exp. #127.]

IEEE Computer Society, San Francisco Chapter. Meetings: alternating Weds., 7:30 pm, SF State. Call: (415)905-4400. [Exp. #123.]

Independent Computer Consultants Association, Northern California Chapter. Meetings: Dinner: 2nd Tues., 6:00 pm; Breakfast: 4th Thurs., 7:30 am; The City Club, 155 Sansome St., San Francisco. Open discussion, questions and answers. Call: (415)399-0305. [Exp. #127.]

North Bay Systems Professionals. Meetings: 3rd Wed., 6:00 pm networking, 7:00 pm dinner, 8:00 pm speaker. Embassy Suites Hotel and Conference Center, 101 McInnis Parkway, San Rafael. NBSP provides a forum for systems professionals to grow and to benefit from a network of other like professionals. Call: (415)721-4409. [Exp. #127.]

Society For Technical Communication, Berkeley Chapter. Meetings: 2nd Wed., 6:30 pm dinner, 7:45 pm program, Upstairs at Yenching Restaurant, 2017 Shattuck Ave., Berkeley. Different speaker every month. Call: (510)466-5464. [Exp. #122.]

Society For Technical Communication, East Bay Chapter. Meetings: 1st Thursday. Red Lobster in Dublin. A nonprofit organization for writers, editors, managers, educators, students, and graphic artists. Call: (510)831-1098. [Exp. #122.]

Society For Technical Communication, San Francisco Chapter. Meetings: 3rd Wed., 6:00, program at 7:00 pm. Stagecoach Restaurant, 44 Montgomery St., San Francisco. For technical writers, editors, and other technical communicators. Some meetings are dinner meetings, for which reservations are necessary. Call: (415)985-7121. [Exp. #123.]

Society For Technical Communication, Silicon Valley Chapter. Meetings: 4th Thurs. 5:30 pm refreshments, 6:30 pm dinner, 7:15 dessert. Sunnyvale Hilton, 1250 Lakeside Drive (off Lawrence Expressway at 101). Guest speakers, special interest groups, networking, job listings, newsletter. Call: (408)737-9426. [Exp. #127.]

Software Entrepreneurs' Forum. 3rd Wed., 6:30 pm, Elk's Lodge, 4249 El Camono, Palo Alto. Industry association dedicated to software developers and entrepreneurs, offering information and education on all facets of the software industry. Call: Information, (415)854-7219; reservations, (415)965-9003. [Exp. #126.]

Software Process Improvement Network. Meetings: 3rd. Wed., San Ramon. For people interested in software process improvement, including theory and practical experience. Free. Call: Janet Deeney, (510)823-2348. Email: jmdeene @pbl.pacbell.com . [Exp. #123.]

United Sysops Association (U.S.A.). Meetings: 2nd Wed, 7:30 pm, call for location. Call: Beth Hall, (408)522-8690. [Exp. #123].

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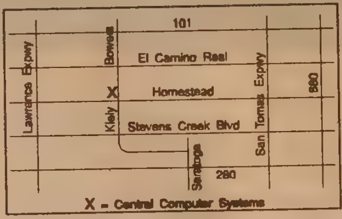

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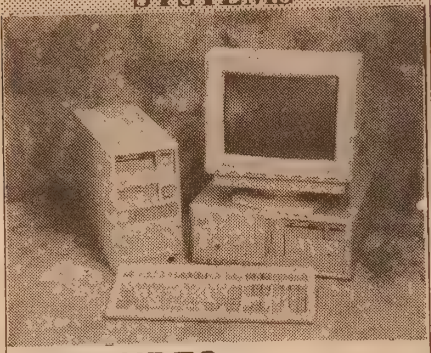

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HARDWARE

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Discovery CD 16 Int	299
Edutainment CD 16 Int	389
Game Blaster 16 CD Kit	409
Midi Kit	59
Sound Blaster Pro Multimedia Kit Ext	369
Sound Blaster Pro Deluxe	75
Sound Blaster 16 MCD	155
Sound Blaster 16 ASP	185
Sound Blaster 16 SCSI / ASP	165/195
Sound Blaster AWE 32	279
Video Blaster SE	245
Video Spigot for Windows	239
Wave Blaster	189

MEDIA VISION

Fusion CD 16 Int	*(195)
Fusion Double CD 16 Int	*(299)
Midi Mate	49
MV2000 Family Deluxe Kit	345
MV3000 Super Deluxe Kit	399
MV4000 Premium Deluxe Kit	525
Pro Spectrum 16 Multimedia Kit	*(395)
Pro 16 Multimedia System II	*(445)
Pro 16 Multimedia System III Int (new)	635
Pro Audio Spectrum 16	87
Pro Audio Studio 16	118

MITSUMI

FX-001D 250ms Double speed w. Kit	149

NEC

CDR510 195ms, Triple speed Int	359
3XI 195ms, 450Kb/s, Triple speed Int	499
3XE 195ms, 450Kb/s, Triple speed Ext	549
3XP Portable, Triple speed	425
Interface Kit for PC	69

PANASONIC

562 320ms, 300Kb/s, Int	159
- with controller	179

PLEXTOR (TEXEL)

DM-3028 240ms, Int	269
- with controller	314
DM-5028 240ms, Ext	379
- with controller	424
Driver Kit for Media Vision Int / Ext	19/49

TOSHIBA

3401B 200ms, 330Kb/s, Int	305
- with controller	350
3401E 200ms, 330Kb/s, Ext	385
- with original Toshiba Case	429

TURTLE BEACH

Maui Synthesizer	149
- with Karaoke	165
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CD Caddy	4.99
Speakers :	
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Active B789 120W Speakers	79
Active SP-690 Amplified Speakers	42
Altec ACS50 Speaker Systems	75
Koss Maximun DR Amplified Speakers	65
Labtec Speakers CS150	25
Sound Cards :	
Gravis Ultrasound	129
SIIG Play Computer Games On Your TV	159
Trantor T130 SCSI Interface Kit (w/o cable)	45

2. CASE

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Baby Tower w. 200W Power	69
Mid Tower w. 230W Power	79
Mid Tower w. 250W Power: Black / White	139/129
Full Tower w. 250W Power	129
Full Tower w. 300W Power: Black / White	199/189
Pro Line Media Baby AT 250W built-in speakers	135
Slim (2 drive bay) w. 130W Power	79
Hard Disk Drive External Casing	
- 1 half ht or SCSI for Mac, 40W, w. cables	79
- 2 half ht or 1 full ht for PC, 60W	99
- 2 half ht or 1 full ht for Mac, 60W, w. cables	125
- 3 half ht or 1 full & 1 half ht for PC, 60W	119
- 3 half ht or 1 full & 1 half ht for Mac,w.cables	145

3. CONTROLLER

ADAPTEC

1522A Fast SCSI w. Kit, 3Mb/s	145
1542CF SCSI 10Mb/s	175
- w. Kit	239
2742T SCSI EISA w. Kit	365
2842VL SCSI VLB	275
- w. Kit	289
ASW-1440 ASPI Netware Manager v3.3	65
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BUSLOGIC

BLI-KT 542B SCSI-2 w. Kit	199
BLI-KT 545S Fast SCSI-2 w. Kit, 10Mb/s	209
BLI-KT 747S Fast SCSI-2 EISA w. Kit	365
BLI-BT 445S SCSI VLB w. Kit	275

COREL

Corel SCSI Software v1.2	69
Corel SCSI Software v2.0	89
Corel SCSI CD Power	69

DTC

2278VL 32 bit, IDE w. I/O	39
3280SAS SCSI	105

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TMC-1660 SVP	127
TMC-1680 for AT, 15Mb/s, (4F&H)	129
TMC-1680 SVP (SCSI Value Pack)	145

KOUWELL

IDE Controller only	27
IDE w. AT I/O (2S 1P 1G)	34
IDE w. AT I/O (2S 1P 1G) w. 16550 chips	59
IDE w. AT I/O (2S 1P) VLB	49
IDE w. AT I/O (2S 1P) VLB w. 16550 chips	69

PROMISE (drive cache)

DC-200 IDE cache up to 16MB	95
DC-420 IDE VLB w. 512k cache up to 1MB	109
DC-4030VL IDE VLB cache up to 16MB	125
DC-2040 Bios Chips & CD Driver	25

ULTRASTOR (w/o cable)

ULT14F ISA SCSI w. 32k cache	175
ULT34F VLB SCSI-2 w. 32k cache	235

VITEX

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IDE w. 4FD/ 2S 1P/ 16550 chips	49
IDE w. 4FD/ 4S 2P 1G/ 2S16550/ VLB	89

WONDER SYSTEMS (USA made)

IDE w. 4FD/ 2.88MB/ drivers tape, 1.0 Mbps FD speed	35
IDE w. 2HD/ 4FD/ 2S 1P/ drivers tape/ 5IRQ for com ports, 1.0Mbps FD speed	39
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VL2000 IDE VLB w. AT I/O	45
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4. CPU & MATH CO

CPU :

AMD

386 DX-40	59
486-DX2-66	349

INTEL

386 DX-33	69
486 DX-33	269
486 DX-50	399
486 DX2-50	315
486 DX2-66	389
Pentium 586-60	729
Pentium 586-66	829

Math Co Processor :

CYRIX

83D86 - 33	69
83D87 - 40	69
Cx486 DLC TI-33	75
Cx486 DLC TI-40	85

INTEL

387 DX (for 16 / 20 / 25 / 33 MHz)	85
387 SX (for 16 / 20 / 25 / 33 MHz)	79

OTHERS

Cooling Fan (heat sink)	9

5. DIGITIZER

SUMMASKETCH

III 12 x 12, 4 or 16 button	269
III 12 x 18, 4 or 16 button	549

WACOM

UD-0608R 6 x 8, UP-201 Pressure Stylus	349
UD-1212RP 12 x 12, UP-201 Pres. Stylus	529

6. DRIVE

HARD DRIVES :

CONNER

CFA-170A 170MB 13ms IDE 1" ht	179
CFS-210A 213MB 14ms IDE 1" ht	199
CFA-340A 340MB 13ms 64k IDE 1" ht	255
CFA-340S 340MB SCSI	329
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M2694ESA 1.0GB 10ms SCSI-2 3.5" 1/2 ht	765

MAXTOR

MXT-7131A 130MB 15ms IDE 3.5"	179
MXT-7245A 245MB 15ms IDE 3.5"	219
7290S 290MB 14ms SCSI	285
LXT-7345A 345MB 14ms IDE 3.5"	259
MXT-7345S 345MB 15ms SCSI 1" ht	345
MXT-540A 540MB 8.5ms IDE 1" ht	385
MXT-540SL 540MB 8.5ms SCSI-2 1" ht	449
MXT-1240S 1.2GB 8.5ms SCSI-2 3.5"	1055
Optical Rewritable 1.3GB 19ms SCSI, 4MB Ext	
Tahiti III w. Adaptec 1542 & Plastic Cart	2830
1GB Glass Cartridge	165
1GB Plastic Cartridge	135

QUANTUM

EIS-170AT 170MB IDE	179
LPS-240AT 244MB 16ms 256k IDE	227
LPS-340AT 344MB 12ms 128k IDE	259
LPS-340S 344MB 12ms 128k SCSI	299
LPS-525AT 525MB 10ms 512k IDE	385
LPS-540S 540MB 12ms 128k SCSI	399
EP1080S 1.08GB 9.5ms SCSI-2	729
PRO-1225S 1.2GB 9ms 1.2M cache SCSI	935
PRO-1800S 1.8GB 10ms 512k SCSI-2	995

SEAGATE

ST3243A 214MB 16ms 32k IDE	209
ST3290A 261MB 16ms 64k IDE	225
ST3391A 341MB 12ms 256k IDE	285
ST3655A 545MB 12ms 256k IDE	415
ST3600N 525MB 10ms 256k SCSI-2	469
ST31200N 1.05GB 9ms 256k SCSI-2	795
ST12550N 2.14GB 8ms 1M SCSI-2	1715
ST43400N 2.9GB 10ms 512k SCSI-2	2069

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105MB 3.5" w. cart. & SCSI cont. for PC,Int	379
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105MB 3.5" w. cart., IDE host adapter	355
270MB 3.5" w. cartridge, SCSI, Ext	585
105MB Cartridge	59
270MB Cartridge	89

TEAC

1.2MB 5.25"	48
1.44MB 3.5" / w. frame	38/42
2.88MB 3.5" w. frame	85
Dual - 1.2MB & 1.44MB	105

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Removable Case for 3.5" HD IDE	39
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Bocaboard w. cable (fast chip serial)	
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AT I/O (2S 1P)	27
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VITEX

AT I/O (2S 2P) w. 16550 chips	45

8. KEYBOARD

ANCER (black)

101 Key	42

FOCUS

FK2001 101 Click	42
FK9000 129 Key Programmable	59

NORTHGATE OMNI

101NI	69
102	69
Ultra T	95

SIIG

Suntouch 101 Click	49
Suntouch Jr. 84 Key Mini	45
Supertouch 101 Click (5 yr. warranty)	53
Wave Touch 101 Soft (5 yr. warranty)	39

OTHERS

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Keycat II 101 w. trackball mouse	65
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Maxi Key 124	59
Mitsumi 101	30
PT505C 101	25

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4MB x 36 - 60ns / 70ns	679/669
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SIPP

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for KX-P4420/ 4450i	
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for KX-P4455 - 2MB	169
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QMS	
for PS410	
- 1MB / 2MB / 4MB	99/145/235
for PS815/ 825	
- 2MB / 4MB	159/249
Texas Instruments	
for Micro Writer - 1MB	69
for Micro Laser Turbo XL - 1MB	69

PACIFIC DATA :

Pacific 4 for HP IIP+/ IIIP/ III/ IIID	
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Pacific 4 SIMM	
for HP 4/ IIISI/ XL300	
- 4MB / 8MB	189/375
for ProTracer	
- 5MB / 8MB	365/515

10. MODEM & FAX

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14.4 Fax modem Int / Ext	125/155
14.4 Pocket Fax modem	169

GVC

14.4 Fax modem Int / Ext	115/135
PCMCIA 9624 Fax	139
PCMCIA 144 Fax	245

HAYES

Accura 2400 Int / Ext	65/75
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Accura 144 + Fax Int / Ext	175/189
Accura 28.8 Fax 14.4 Ext	249
ESP Communication Single Serial	85
ESP Communication Dual Port	125
Optima 144/144 Fax modem Ext	389
Optima 288 V.Fast 144 Fax Ext	435
PCMCIA Optima 144 Fax	325
Pocket Edition 2400 w. Smartcom EZ	129
SmartCom for Windows	*(47)

INTEL

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Faxability Plus/OCR for Windows 2.0	*(75)85
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New Fax modem 96 Int / Ext	*(119)/*(139)
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- 400 144/144 v.42, v.32bis, MNP5 Int	269
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MEGAHERTZ

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PCMCIA XJ1144 144 Fax w. X-Jack	*(295)
P2144 Pocket 144/144	255

MICROCOM

Deskporte ES 28.8 Fast 14.4 Fax Ext	255
Deskporte EP 28.8 Fast 14.4 Fax Ext	435
Microporte 4232bis Fax modem	465
QX 4232bis	455
QX 4232bis + modem	565

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PM144FX144 Int	165
Pocket 144 Fax modem	299
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SHIVA

Net modem/E Ethernet BNC/TP	1475

SIIG

TeleCommunicator 10-in-1 Fax modem	219

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Courier 16.8 Ext / w. Fax	465/525
Courier v32 Terbo Fax 19.2MB w. ASL Int	379
Courier v32 Terbo Fax 19.2MB w. ASL Ext	425
Sportster 144/144 Fax MNP5 Int / Ext	125/145
Sportster 144/144 for Mac Ext	189

ZOOM (7 yrs. warranty fr. Zoom)

96/96 w. WinFax Lite Int / Ext	135/155
144/144 w. WinFax Lite Int / Ext	145/165
144/144 Fax Modem & Voice Int / Ext	175/195
28.8 V. Fast 14.4 Fax Int / Ext	225/245

ZY-XEL

U1496B 16.8 voice 14.4 Fax w. Win s/w Int	299
U1496+ upgradable to 19.2Kbps Int	415
U1496E 16.8 voice 14.4 Fax, LED Ext	309
U1496E+ upgradable to 19.2Kbps Ext	419
U1496P Portable 16.8 / 14.4 Fax 2 line	399

OTHERS

CommShare 550 Phone & Fax Auto Switching	89
National Semi TyIN 2000 Answer/Fax	99
Supra 14.4 Fax modem Int / Ext	129/149
Winport (modem & fax sharing software)	195
Zoltrix 96/24 Fax modem v.42, MNP5 Int	69

12. MONITOR

EMC

EM1412 14" Mono Amber, 90-260v	95
EM1417 14" 1024 x 768 VGA Mono Paper White	119
EM1428 14" 1024 x768 .28, 90-260v	245
EM1439G 14" 1024 x 768 .39	209

MAG (auto switch power)

MX15FG MPRII 15" Flat 1280 x 1024 .28, NI	469
MX17FG 17" Flat 1280 x 1024 .26, NI	879
Mac Adapter	25

MITAC (3 yr. warranty)

M1564 15" 1280 x 1024 .28, NI	375
L1782 17" 1600 x 1280 .26, NI	699

MITSUBISHI

HL6955SETK 20" 1280 x 1024 .31, NI	1745
TFS6705 Diamond Pro 17" 1280 x 1024 .26, NI, Tinitron, MacII, 100-240V	1045
BNC Cable	39

NANAO (call for rebate info.)

F340iW 15" Flat Screen 1024 x 768 .28	545
F550i 17" 1280 x 1024 .28, NI	945
F550iW 17" 1280x1024 .28, NI	1055
F560iW 17" 1280x1024 .26, NI	1295
T560i 17" 1280 x 1024 .25, NI	1635
T660i 20" 1280x1024 .31,Trinitron	2395
F760iW 21" 1280x1024 .31,NI	1965
F780iW 21" 1600 x 1280 .26, NI	3195

NEC (120V)

SVGA 14" 1024 / 768 .28	329
3FGe 15" 1024 x 768 .28, Mac	569
3V 15" 1024 x 768	479
4FGe 15" Flat 1024 x 768 .28, NI, Mac	625
5FGe 17" 1024x768 .28, NI / w. Lens	975/1055
5FGp 17" 1280 x 1024	1129
6FGp 21" 1280 x 1024	1995
NEC Monitor Lens : Anti-reflection, Anti-satic	
for 4FG / 5FG / 6FG	*(59)/*(99)/185
FG/MacII Cable Adapter Kit	14.50

NOKIA

449E 15" 1280 x 1024 .28, NI	499
447B 17" 1280 x 1024 .25	955
445X 21" 1600 x 1280 .26	2499

OPTIQUEST

1000S 14" 1024 x 768 .28, NI	289
1500D 14" 1280 x 1024 .28, NI	359
2000DX 15" 1280 x 1024 .27, NI	399
4000DS 17" 1280 x 1024 .27, NI	950
4000DC 17" 1280 x 1024 .27, NI	979

PROTON

PM1561A 15" 1280 x 1024 w. speakers built-in	389

SEIKO (90-132V)

CM2050 20" 1024 x 768 .31, NI, Mac	1295

SIIG

9" VGA Mono Paper White 640 x 480	135

SONY

1430S 14" 1024 x 768 .25, NI, 120V	529
17SE 17" 1600 x 1280 .25	1099
1730 17" 1024 x 768 .25, NI	985
2038 20" 1280 x 1024 .30, NI	1965

STANDARD TECHNOLOGIES

400-M 14" VGA Paper White	119
428-VESA 14" 1280 x 1024 .28, NI	279

VIEWSONIC

4e 14" 1024 x 768 .28, 110/220V	279
5+ 14" 1024 x 768 .25, NI, MacII	475
6e 14" 1024 x 768 .28, NI	295
14e 14" 1024 x 768 .28, NI, MPRII	349
15 15" 1280 x 1024 .28, NI, MacII	449
17 17" 1600 x 1280 .27, NI, MacII	975
17G 17" 1280 x 1024 .28, NI	825
20 20" 1600 x 1280 .28, NI, MacII	1575
21 21" 1600 x 1280 .26, NI, MacII	1799
Mac Cable Adapter	35

OTHERS

Monitor Power Saver	39
Telepower (save energy)	49

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*(price) .... special, while supply last

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13. MOTHERBOARD

AIR (w/o cpu)

486-33 / DX2-66 256k, 3VLB slots	199
486-33 / DX2-66 256k EISA, 3VLB slots	399
486SH - 33 / DX2-66 256k, Green PC	165
Pentium 256k ISA VLB, IDE I/O built-in	535
PCI 586 256k EISA, Fast-wide SCSI built-in.	735

AMI

Super Voyager II 486-33 256k VLB, 7 slots	645
Super Voyager II 486-DX2-66 VLB, 7 slots	845
Enterprise III 486-33 256k EISA VLB	875
Enterprise III 486-DX2-66 EISA VLB	1095
Enterprise IV 486-33 256k EISA VLB	735
Enterprise IV 486-DX2-66 256k EISA VLB	935

ALARIS (IBM)

486SLC2-66 64k VLB w. CPU & Math Proc.	299

DIAMOND

486-DX Fast Bus VLB	185

IBM

486BL3X-75MHz VLB w. CPU & Math Proc.	499
486SLC-33 / 66 16k Internal cache ISA v.2 w. CPU & Math Processor	259

LYNX (USA made)

486-33 / 50 / DX2-66 256k VLB	149

MICRONICS

386-33 64k Gemini, 32MB max	245
BCP 386-33 64k, 4MB max w/o cpu	85
- w. CPU	145
486-33 256k VLB	535
486-DX2-66 256k VLB	655
JX30 486-DX2-66 256k VLB w. Zif socket	725
486-33 256k EISA VLB	795
486-DX2-66 256k EISA E2	820
486-DX2-66 256k EISA VLB	920
PCI 586-60 256k, ISA 3PCI slots	1365

NICE (w/o cpu)

486-33 / DX2-66 256k VLB	199
486-50 / DX2-66 256k Mini EISA VLB	259
486-50 / DX2-66 256k EISA VLB	399

SUPER P5VL & P54VL-PCI

Pentium VL- PCI 586-60 256k	399
- w. Flash Bios	419
Pentium VL- PCI 586-90 256k Flash Bios	465
Pentium VL- PCI 586-100 256k Flash Bios.	525

QUICKPATH

486-50 64k 15ns ISA, w/o cpu	175

OTHERS

386-40 128k w. CPU / w/o cpu	159/109
486-33 128k ISA w/o cpu	125
486-33 256k ISA w/o cpu	139
486-DX2-66 256k VLB w. Zif Socket, w/o cpu	139
486-DX2-66 256k PCI, Built-in SCSI & AT I/O	299

14. MOUSE & JOYSTICK

AGILER

ATB-610 Serial Trackball	24.50
Master Plus 400	19.50

ANCER (black)

3-button	22

KENSINGTON

Bus 4.0	119
Expert Serial & Trackball 4.0	99

LOGITECH

C14 Serial (2-button) oem	19
Cordless II	85
Cyberman 3D Controller	69
Dexxa Serial	19.50
First Serial C15 oem / reg.	25/31
Fotoman Plus Camera for PC & PS/2	495
Mouseman Bus	64
Mouseman Serial oem / reg.	34/50
PG15 Bus oem	49
Trackman Portable	69
Trackman II	75

MICROSOFT

Ball Point Portable	119
Bus 2.0 oem / w. Bus Card	46/69
Bus 2.0 w. Expansion Card	89
Mouse 2.0 + Windows 3.1	149
PS/2 2.0	65
PS/2 Mouse Adapter	7.95
Serial 2.0 oem	45
Serial 2.0 w. 9 to 25 pin Adapter	59

MOUSE SYSTEMS

Little Mouse PC Serial (2-button optical)	29
Mouse ! Serial	21.50
New Point (trackball for laptop & PC)	*(32)
PC Mouse (3-button optical)	*(45)
PC Trackball II	49
Serial Bus Card (9IRQs)	29
The New Mouse 400dpi (3-button)	39

JOYSTICK :

THRUSTMASTER

ACM Gamecard	29
Flight Control System / Pro	68/114
Flight Stand Holder	19
Formula TI (drive control)	129
Rudder Control	115
Weapon Control MKII	*(99)

OTHERS

Analog Pro.	35
Gravis Game Pad	23
Quickshot Smart Game Card	16.50
Warrior 5, Quick Shot	14.50

15. NETWORK

3COM

3C503 8 bit coax / TP	179/*(159)
3C503 Etherlink II 16 bit coax / TP	169/179
3C507 16 bit Ethernet coax / TP	289/299
3C509 Etherlink III coax / 5 pack	125/555
3C509 Etherlink III TP / 5 pack	122/545
3C509 Combo / 5 pack	145/595
3C529 Etherlink III for MCA coax / TP	245/249
3C579 Etherlink III EISA coax / TP	235/239
3C589 PCMCIA TP / Combo	255/299
3C16270 Link Builder TP, 12 Port HUB	395
TokenLink III 16/4 ISA / MCA / EISA	435/495/645

ADDTRON (Novell compatible)

AE-200JL Jumperless BNC & TP	65
AE-200LB 8 or 16 bit BNC only	55
AE-200LC 8 or 16 bit BNC & TP	59
AE-200LT 8 or 16 bit TP only	55
Arcnet: Arc120TP 8 bit Combo	59
Arcnet: Arc220TP 16 bit Combo	69
Arcnet: 8 Port Active HUB coax / TP	135/145
ET-200STS NE2000 coax compatitble	65
Boot PROM 16 bit	15
HUB: UTP8 (8TP + 1BNC) (new model)	155
HUB: UTP16 (16TP + 1BNC + 1AUI)	435
Pocket Adapter: BNC / TP	125/129
Transceivers: ET10TB (TP<-->AUI)	39
Transceivers: ET10CB (BNC<--> AUI)	39

ALLIED TELESIS (CentreCOM)

AT-1500T / AT1700T (TP)	79/79
AT-1500BT / AT-1700BT (BNC + TP)	99/99
Transceivers: MX10 / 210T	42/42

ARTISOFT (Lantastic)

AE-2 Ethernet Adapter	195
AE-3 Ethernet Adapter	*(205)
AI Software 5.0 Win / 6 pk / 12 pk	85/450/795
Central Station II	399
Ethernet s/w Kit 5.0 w. cable Dos / Win	79/139
Lantastic Z 5.0 (2 stations)	*(69)89
Lantastic for TCP/IP single / 5-user	185/760
Lantastic 6.0 Starter Kit 2-user	345
Lantastic 6.0 Add On Kit coax / TP	165/169
Lantastic 6.0 Software Kit	85
NR2000A Combo	225
NR2000C BNC only / 6-pk	172/975
NR2000C Starter Kit Win	*(429)
NR2000T RJ45 only single / 6 pk	175/979
NR2000 MCA	255
NR-SI 2000C	85
NR-SI 2000T	89
NR-SI 2000A Combo	129
NR-SI 2000M for MCA	165
Peer-HUB 10BaseT Concentrator	270
Remote Boot ROM for AE-2, AE-3, NR2000.	45
T-Runner 8 Port HUB	320
T-Runner 12 Port HUB	520

ASANTE

AH1012 Intelligent HUB 12 Port	875
10T HUB 8 Port	255
10T HUB 12 Port	495
FriendlyNet with AUI / BNC / TP	69

CASTELLE

JetPress (network print server) for HP II, IID, III, IIID, coax / TP	429
LANPress (print server connects up to 4 printers)	
- Ethernet Thick/Thin coax (1P 3S)	475
- Ethernet Thick/Thin coax (2P 2S)	625
- Ethernet 10BaseT (1P 3S)	475
- Ethernet 10BaseT (2S 2P)	635

CC:MAIL

cc:Mail Dos Platform 4.0	199
cc:Mail Win Platform 2.0	345
cc:Mail 10-user pk / 25-user pk	249/579
cc:Mail Fax 1.2	1350
cc:Mail Group Pak for Win	595
cc:Mail Remote Dos	159
cc:Mail Router 4.0	875

DCA

Crosstalk 2.0	119
Commuicator	58
IRMA Workstation Dos / Win	225/359
IRMA 3270 for MacII/ LC/ SE	695

FARALLON

PN381 PhoneNet w. Timbuktu for Win	259

IBM

Ether 16 coax / TP	89/85
Ether 16 Combo	95
PCMCIA for Token Ring 16/4	479
PCMCIA 10B2 / 10BT	255/235

INTEL

EtherExpress Flash LAN Combo / 5 pk.	135/625
EtherExpress LAN Combo	129
EtherExpress 16 coax / 5 pk	112/485
EtherExpress 16 Flash coax	122
EtherExpress 16 TP / 5 pk	109/*(465)
EtherExpress 16 TP Flash / 5 pk	125/565
EtherExpress 16 MCA coax	175
EtherExpress 16 MCA TP	185
EtherExpress 32 EISA (ws)	439
Flash 32 EISA	249
HUB: 12 Port EtherExpress ISA	565
HUB: 12 Port EtherExpress EISA	645
LAN Protect 1.5 (virus protection)	685
LAN Sight Support 4.0	345
LAN Spool s/w 386 NLM v3.5A	425
Netport II Thin & Thick / 10BT	395/399
Netport Express XL	465
NetSatisfaxtion v2.5 for Novell	955
TokenExpress - 16/4 ISA	435
- 16/4 EISA	655
- 16/4 MCA	475

LANPRO

2000JC 16 bit coax (BNC only)	49
2000JT 16 bit TP with cable	49
2000JA 16 bit Combo	54
2000A 3-in-1	55
HUB ER5390 : 8 Port (8TP + 1BNC)	175
HUB ER5396 : 16 Port (16TP + 2BNC)	355
Netware NE2000 Combo Starter Kit	195

NOVELL

Dos 7	59
EPROM for NE2000	35
EP2000 coax / TP	99/89
Microdyne NE2000+ coax / 5 pk	99/445
Microdyne NE2000+ TP / 5 pk	95/*(399)
Microdyne NE2000+ Combo / 5 pk	125/*(495)
Microdyne NE3200 EISA coax	450
NE2000T Plus Ethernet TP / 5 pk	105/435
NE3200 Eagle EISA coax w. TPA	*(475)
NE3210 EISA 32 bit Combo (ws)	215
Netware 3.12	
- 5 / 10 / 25-user	615/1395/2085
- 50 / 100 / 250-user	2695/3995/6995
Netware 4.01	
- 5 / 10 / 25-user	825/1795/2625
- 50 / 100 / 250-user	3595/5495/9695
NPE 400 Print Server	350
NTR 2000 Token Ring	435
Personal Netware oem / reg.	59/75
Personal Netware NE2000 Starter Kit	195
Unixware Personal Edition - CD version	175
Unixware SDK v1.1 - CD version	75
- NFS	135

SMC (Western Digital)

8003 Plus Elite 8 bit coax	99
8013 Plus Elite 16 coax / 6 pk	125/595
8013 Plus Elite 16 TP / 6 pk	127/629
8013 Plus Elite 16 Combo / 6 pk	149/775
8013 Plus/A for MCA / TP	195/199
8033 Elite 32 coax / TP	595/599
8 Port Concentrator (8TP + 1AUI)	349
12 Port Concentrator (12TP+2AUI+1BNC)	595
Elite Ultra 16 coax / 6 pk	110/*(479)
Elite Ultra 16 TP / 6 pk	112/*(475)
Elite Ultra 16 Combo / 6 pk	129/*(575)
Netware Boot ROM for Ethernet	34
Token Ring 16/4 ISA / MCA	279

SYNOTICS

Network products	call

XIRCOM

PCMCIA CE-10B2 BNC	*(245)
PCMCIA CE-10BT	*(249)
PCMCAI CE-10BC Combo	*(285)315
PE3-10B2 Pocket Adapter coax	*(255)285
PE3-10BT Pocket Adapter TP	*(259)289
PE3-10BC Pocket Adapter Combo	*(295)325
PEM-10B2 w. Modem	*(425)499

CABLES & ACCESSORIES

10BaseT, Level 3 plenum 1000'	165
Belden 8259, RG58 1000'	165
RG58 500' / 1000'	65/109
Twisted Pair 4-pair, PVC, Level 3	
- 1000' / 500' / 200'	89/55/35

16. POWER SUPPLY

AMERICAN POWER CONVERISON

APC-400 Smart-UPS (286, 386 WS)	289
APC-600 Smart-UPS (386, 486 FS)	359
APC-900 Smart-UPS (386, 486, FS & WS).	569
APC-1250 Smart-UPS (multiple FS & WS)	699
APC-400 Back-UPS (300W)	179
APC-450 Back-UPS (325W)	215
APC-600 Back-UPS (425W)	285
APC-900 Back-UPS (650W)	375
APC PowerChute Plus :	
- for Novell	65
- for OS/2, Lan Server, 3 Com	75
- for Unix / Xenix	99
- for Windows NT	69
Power Doctor (DOS) I/F Kit for Smart-UPS	79
Surge Arrest Unit	call

GENERAL

250W for Baby AT / Baby or Mid Tower	45/45
250W for AT	47
250W for Full Tower	49
300W for Full Tower	69
550W for UPS	279
1200W for UPS	659

PC POWER COOLING

Standard 220 for Desktop / Full Tower	85/85
Silencer 270	
- for Slim (baby or mid tower)	149
- for AT Desktop / Full Tower	165/165
Turbo Cool 300	
- for Slim (baby or mid tower)	149
- for Desktop / Full Tower	175/175
Turbo Cool 450	
- for Desktop / Full Tower	325/325

TRIPP LITE

Isobar 4	*(29.95)
Isobar 6 w. Fax modem Protection.	*(45)
Isobar Console CC16 Plus w. RJ11	75
Isotel 4 w. RJ11	*(39.95)
Isotel Ultra 6 w. RJ11	55.95
UPS Monitoring Board for Netware	59

17. PRINTER

BROTHER

HJ-400 Desktop Ink Jet for PC or Mac	275

CANON

BJ-200 Ink Jet	319
BJC-600 Ink Jet	599

CITIZEN

GSX 145 24 pin, 132 column	355
GSX 220 24 pin	179
GSX 230 Fonts & Quiet	229
GSX 240 Scalable Fonts & Quiet	285
Projet II Ink Jet	279
Accessories :	
- Color Option for GSX 130	4
- Color Option for GSX 145	6

HP (Hewlett Packard w. toner)

Desk Jet 520	28
Desk Jet 500C	39
Desk Jet 560C	56
Desk Jet 1200C / Postcript PC, Mac	1429/219
Jet Direct for 10BT (J2371A) / Combo	429/46
Laser Jet 4 / 4M	*(1365)/186
Laser Jet 4L / 4ML	659/98
Laser Jet 4P / 4MP	949/135
Laser Jet 4Si / 4SiMX	2895/429
Paint Jet / Paint Jet XL300	695/229
Accessories :	
- Envelope Power Feeder 75 Sheet (LJ4)	27
- Legal, Letter or A4 250 Sheet Tray (LJ4)	9
- Legal, Letter or A4 500 Sheet Tray (LJ4)	10
- Lower Cassette w. Letter Tray (IIP, IIIP)	14
- Optional 500 Sheet Legal Letter A4 (LJ4)	27
- Postcript (LJ4)	32
- Toner for LJ II, III	7
- Toner for LJ IIP, IIP+, IIIP	6
- Toner for LJ4	9
- Toner for LJ4l or 4P	6
- Toner for LJ4Si	13

LASER MASTER

Win Printer 800 Postcript	107
Win Printer XL600 11x17, 600x660ppi	235
WinJet 1200 Postcript for LJ4	*(650)77

MICROTEK

TrueLaser MTP-306 6ppm, 2MB, 35 fonts	99

NEC

Super Script 610 Laser 6ppm, 300x300ppi	61

OKIDATA

Printers and Accessories	c

PACIFIC DATA

ProTracer II Ink Jet (CAD Plotter) A4 to A2 size, 360dpi, I960RISC, 512k, 45dBA	12

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*(price) .... special, while supply last

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ProTracer II-GL2 w. HP-GL2 & 2MB	1699
Accessories :	
- HP-GL Emulation Card	375
- Ink Cartridges	19.50
- Postcript Emulation Card	375
- Sheet Feeder I / II	135/115

PANASONIC

1150 9 pin, 55dBA	139
2023 24 pin, Quiet	199
2123 24 pin, 43.5dBA, Color capability	239
2124 24 pin, 43.5dBA, Color capability	319
3624 24 pin, 46.5dBA, Quiet	399
4410 Laser, 512k, 5ppm	549
- Corona KX-PCR3	49
- Developer KX-PDP4	110
- Developer KX-PDP5	125
- Drum KX-PDM4	99
- Drum KX-PDM5	109
- Extra Cassette KX-PKC2	45
- Fonts Card KX-P47x	95
- Fuser Unit KX-PFS5	105
- Optional Second Cassette KX-P495	135
- Toner KX-P453	42
4420 Accessories	
- Developer KX-PDP2	95
- Drum KX-PDM2	99
- Envelope Tray KX-P431	59
- Legal Tray KX-P425	45
- Ozone filter KX-PFT2	29
- Toner KX-P451	42
4430 Laser, 1MB, 5ppm	665
- Accessories same as 4410	
4400 Led Page Printer, 4ppm	499
- Apple Talk Interface KX-P412	179
- Drum Unit KX-PDM6	95
- Postcript Upgrade Board KX-PSU3	399
- Postcript Fax Option KX-PFX1	259
- RS232 Serial Interface KX-P411	95
- Toner Kit KX-P455	17.50
4450 & 4450i & 4455 Accessories	
- Developer KX-PDP1	95
- Drum KX-PDM1	145
- Envelope Tray KX-P430	59
- Legal Tray KX-P420	45
- Ozone Filter KX-PFT1	32
- Toner KX-P450	42
4455 Postcript, 11ppm	1695
5400 Led Postcript Page Printer, 4ppm	799
- Accessories same as 4400	
Others Accessories :	
- 32k Buffer Dot Matrix KX-P43	65
- Auto Sheet Feeder for 1124 KX-P36	120
- Color Upgrade Kit KX-PCK11	55
- Serial Interface Card PS-13	75
- Single Bin cut Sheet Feeder KX-PT10	95

QMS (Adobe Postcript)

PS410 2MB, 45 Fonts, 4ppm	925
- Envelope / Legal / Letter Tray	69/69/69
- Lower Cassette w. Letter Tray	149
- Toner	95

SEIKO

Smart Label Printer Pro	245
Smart Label Printer Plus	159
Box of Label (2 rolls)	7.95

TEXAS INSTRUMENTS

Printers	call

LASER PRINTER ACCESSORIES

PACIFIC DATA

25 in One! for HP DJ500	99
25 In One! for HP II, IID, IIP, IIP+, III, 4Si	245
Complete Font Library for HP III, IIID, IIIP	255
Font Bank for all HP Lasers (stores soft fonts)	
0.75MB / 1.5MB	205/269
Pacific Connect XI :	
For HP II, IID, III, IIID -	
- 5 Port 256k / 1MB (4S 1P)	309/379
- 10 Port 256k / 1MB (10S)	449/519
For HP 4, IIISi, Paint Jet XL300 -	
- 7 Port 1MB / 4MB (6S 1P)	449/649
- 10 Port 1MB / 4MB (10S)	519/179
Pacific DirectNet for Novell	369
Pacific DircetNet for Novell & UNIX	499
Pacific Page 2MB, Postcript for HP II	365
Pacific Page II/XL 4MB, Postcript for HP II	699
Pacific 4 Postcript for HP 4	259
Pacific Page PE for HP IID,IIP,IIP+,III,IIID,IIIP	279
Pacific Page PE 2MB	385
Pacific Talk	179
Postcript 4MB PE/XL for III	699
Plotter in a Cartridge for HP II	225
Plotter in a Cartridge PE	
for HP IID, IIP, IIP+, III, IIID, IIIP	225

PELICAN

Ribbons	call

19. SCANNER

ARTEC (hand)

ViewScan 256 w. OCR	89
- Bundle w. Aldus Pagemaker 5.0	529

HP (flatbed color)

ScanJet IICX Color w. Kit	945
- Auto Document Feeder	475
ScanJet IIP w. Kit (gray scale)	499

LOGITECH (hand)

Scanman Easy Touch w. OCR	189
Scanman 256	169
- w. Omni Page OCR	185
Scanman Color	375
- w. Omni Page OCR	419

MICROTEK (flatbed color)

Scan Maker II w. Photoshop L.E.	649
Scan Maker IIXE w. Photoshop	995

MOUSE SYSTEM (hand)

Page Brush 256 w. OCR / after rebate	139/124
Page Brush Color	*(149)275

TAMARACK (flatbed color)

ArtiScan 24 bit, Color / 256 Gray Levels	
- w. Publisher L.E. 600 / 800 / 1200 dpi	675/775/1045
- w. Pub.L.E. & OCR 600 / 800 / 1200 dpi	725/825/1095
- w. Photostyler 600 / 800 / 1200 dpi	815/915/1185
- w. Phtoshop 2.5 600 / 800 / 1200 dpi	815/915/1185
Slide Scan Kit (transparency, slide, X-ray)	
600 / 800 / 1200 dpi	525/525/595

OTHERS

Fax Scanner w. Bit Fax & OCR	79
Omni Scan 256 for Win	*(259)

20. TAPE BACKUP

COLORADO

Backup for Win	39
DJ-20 250MB QIC-80 oem / reg.	149/165
- 3M DC2120 Tape Cartridge	14.50
- AB-11 External Tape Port	37
- Cable (2FD & tape backup)	6
- FC-10 Controller	79
- KE-09 External Kit w/o Controller	69
- TC-15 Controller w. Data Compression	169
- Unix / Xenix Driver	99
PowerTape PT-25 2GB 300Kb/s Int	965
PowerTape PTE-25 Ext	1095
PowerTape PT-50 4GB 300Kb/s Int	1525
PowerTape PTE-50 Ext	1655
Tracker 120MB (printer port)	285
Trakker 250MB (printer port)	325

CONNER

Archive Viper 2150S Int	335
Tape Stor 250MB w. 3M Cartridge	145

EXABYTE

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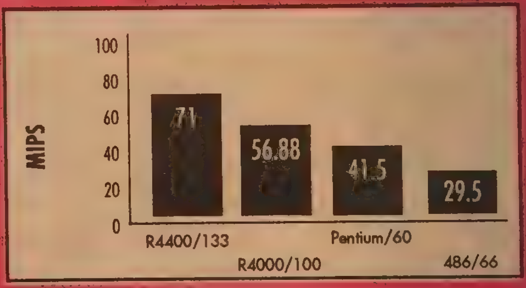

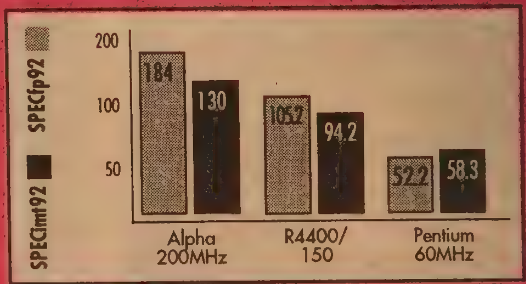

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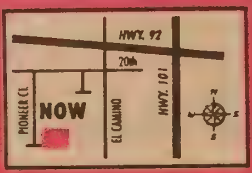

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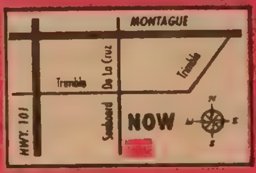

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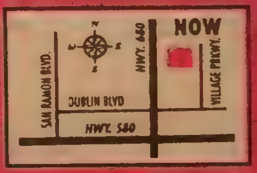

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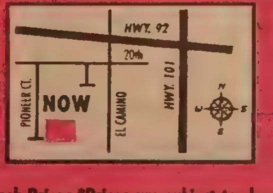

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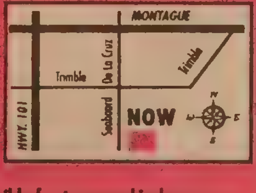

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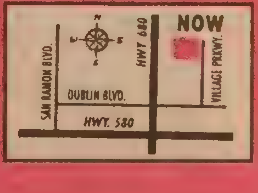

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PRODUCT SPOTLIGHT

Continued from page 206

was fun, fun, fun. It is available in both DOS and Windows, and supports a variety of sound cards. I tested it with cards by Sound Galaxy, Media Vision, and Sound Blaster. 3-D Dinosaur sounded the same with all three setups. You should also have at least a VGA monitor.

3-D Dinosaur comes packaged with special glasses, so that you can see the dinosaurs in 3-D. On the screen are really two images, slightly offset. The glasses merge the images to create a 3-D image, allowing you to see a dinosaur sticking its head through a window while the CD-ROM starts up. Even more surprising is that the images were relatively clear even without the glasses.

There is a "virtual reality" feature, giving you a tour of the museum where the 3-D dinosaurs are kept. The 3-D effect here is that you can completely circle the dinosaurs and view them from all sides as three-dimensional objects. If you have kids, visiting that area is fun.

Without giving everything away, this is one of those products that you need to have just to show off your computer to your friends. Any and all of the kids in your neighborhood will enjoy viewing 3-D Dinosaur. (Knowledge Adventure, Inc., 4502 Dyer St., La Crescenta, CA 91214. 1-800-542-4240)

SMALL BLUE PLANET

Published By: Cambrix Publishing

List Price: $79.95

Reviewed By: Woody Liswood

This intriguing CD-ROM atlas of our planet is something that you should have for your CD-ROM collection.

After adding Small Blue Planet to the collection, my fifth grader used it for two reports and a show-and-tell presentation for his class with pictures from the database.

This is such an interesting product, and

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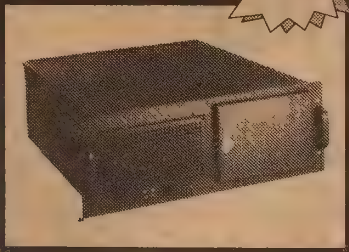

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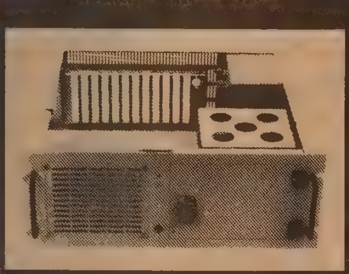

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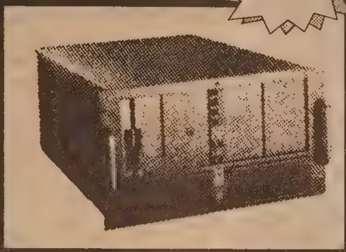

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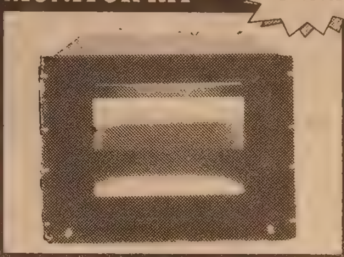

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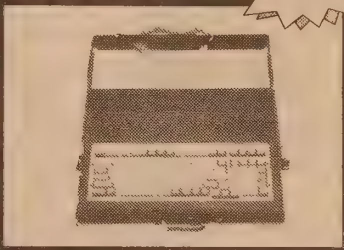

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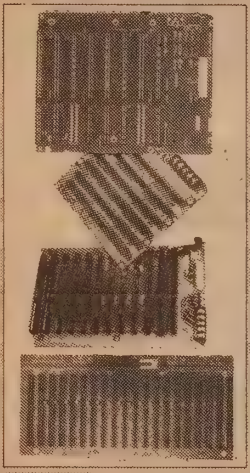

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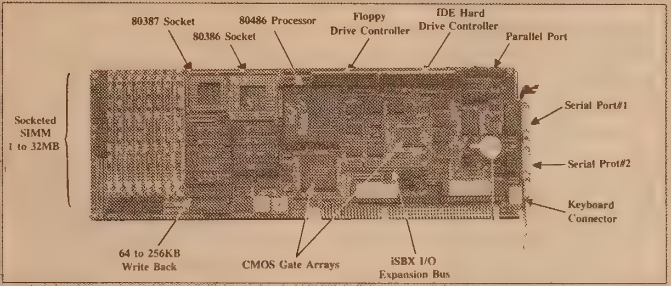

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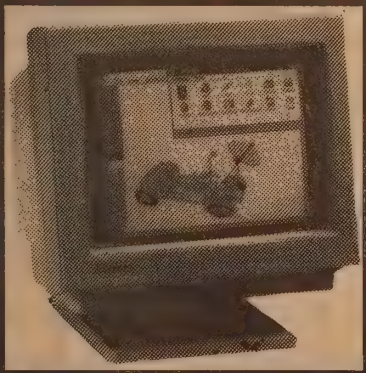

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9" SVGA MONITOR MONO PAPER WHITE

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- POWER SUPPLY: 100-240V

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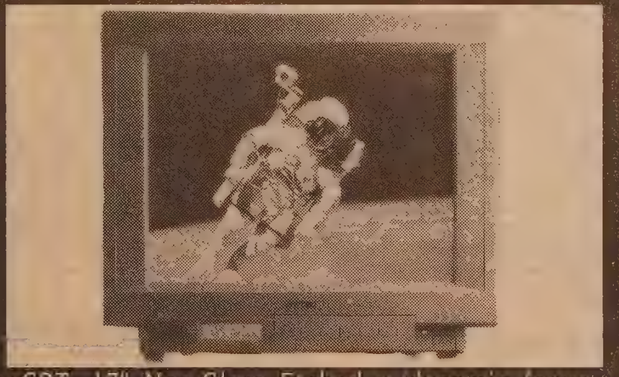

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PRODUCT SPOTLIGHT

according to its documentation, "Small Blue Planet contains three atlas modules: USA Relief Map, Global Relief Map, and World Political Atlas. Both the Global Relief and the USA Relief Maps depict land formations, plate tectonics, volcanology, meteorology, oceanography, glaciation, and more."

What really turned me on about this product was the satellite views of the globe. The information you can see on Small Blue Planet shows just the faint beginnings of what scientists can get from observing spaceship earth from a distance. It can be a humbling experience.

All I can say is "WOW!" (Cambrix Publishing, 6269 Variel Ave., Suite B, Woodland Hills, CA 91367. 818/992-8484)

UFO

Published By: Software Marketing Corp.
List Price: $59.95
Reviewed By: Woody Liswood

If you have a multimedia computer, or know someone who does, UFO is a must for the CD-ROM library.

It contains over twelve hundred documented UFOs (Unidentified Flying Objects) with videos and pictures to show what happened. There is a timeline to let you select the sighting you wish to view. You can also click on a map and the nearest UFO sighting will appear.

In addition to the visuals, which by itself makes this CD-ROM worth the purchase price, there is also text about each incident or sighting. Many cases include a discussion about the event with information from the official investigations.

UFO CD-ROM is searchable via just a few mouse clicks. For instance, it is easy to retrieve a list of events that have motion picture evidence or entailed cattle mutilations.

There is an interesting glossary in the documentation covering topics such as Abduction; Angel Hair; Animal Mutilation; Animal Response to UFO Sightings; Bermuda Triangle; Color, Shape, and Size of UFOs; Close Encounter Types; Dimensional UFOs; Men in Black; UFO Contact with Ancient People; and UFO Intentions.

UFO is one CD-ROM you don't want to miss—it might even make a believer out of you. I couldn't, though, find a picture of the Enterprise or Kirk or Spock during their visits to Earth. (Software Marketing Corp., 9830 S. 51st St., Building A-131, Phoenix, AZ 85044. 602/893-3377)

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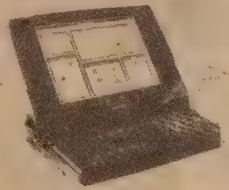

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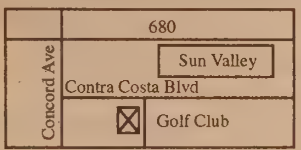

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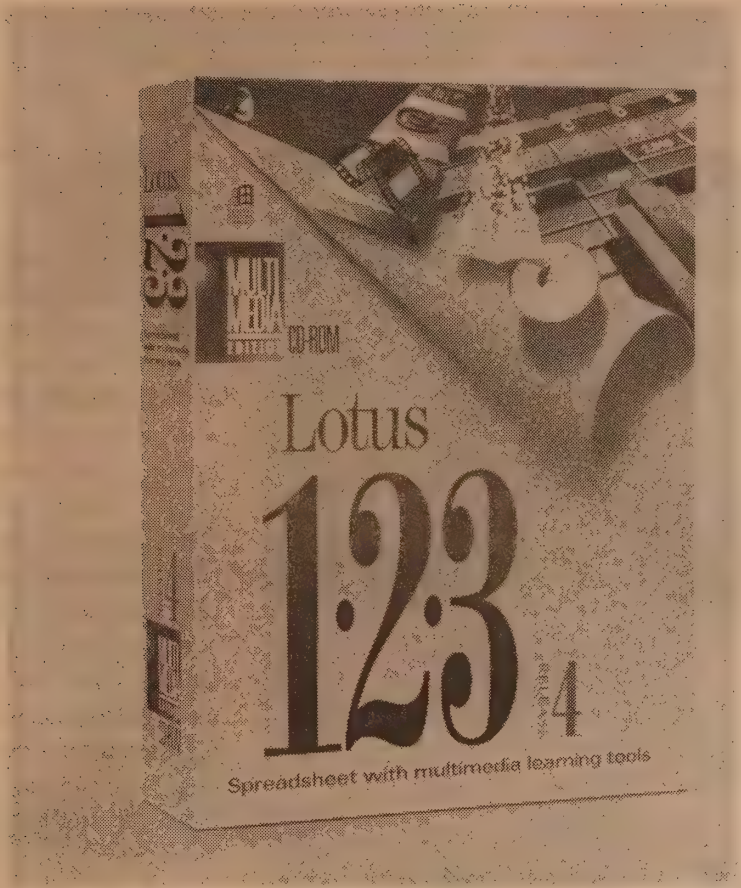

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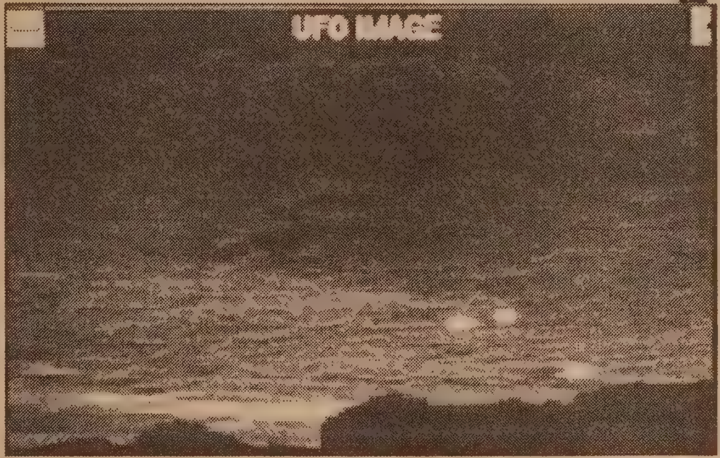

LOTUS 1-2-3 RELEASE 4 FOR WINDOWS: MULTIMEDIA EDITION

Published By: Lotus Development Corp.
List Price: $495, upgrades $129
Reviewed By: Woody Liswood

Several years ago, while trying to explain multimedia, I wrote that a good example of multimedia would be when I had a problem in my Lotus spreadsheet, a pop-up window would show me the solution while “talking” me through it. The latest Multimedia Edition of Lotus 1-2-3 Release 4 for Windows does that—in fact, it does practically everything but automatically correct my mistakes.

The Multimedia Edition has animation sequences which demonstrate functions and features. If you have a question about 1-2-3, an animated guided tour is there to take you around.

Have you ever had to have someone read you a column of numbers so you could proof your work to insure that what you keyed in was what you wanted to enter? Monologue software could do this for you. Now this CD-ROM Lotus edition also does this. If you work alone, as I mostly do, this feature is invaluable.

Lastly, all of the Lotus documentation can be accessed directly from the CD-ROM. While I still like to peruse hardcopy of the documentation—it sometimes gives me answers to questions I haven't asked yet—I found the online documentation valuable and a time saver, especially since I no longer have to remember where I had put the books in the first place.

Lotus 1-2-3 Release 4 for Windows: Multimedia Edition marks the beginning of

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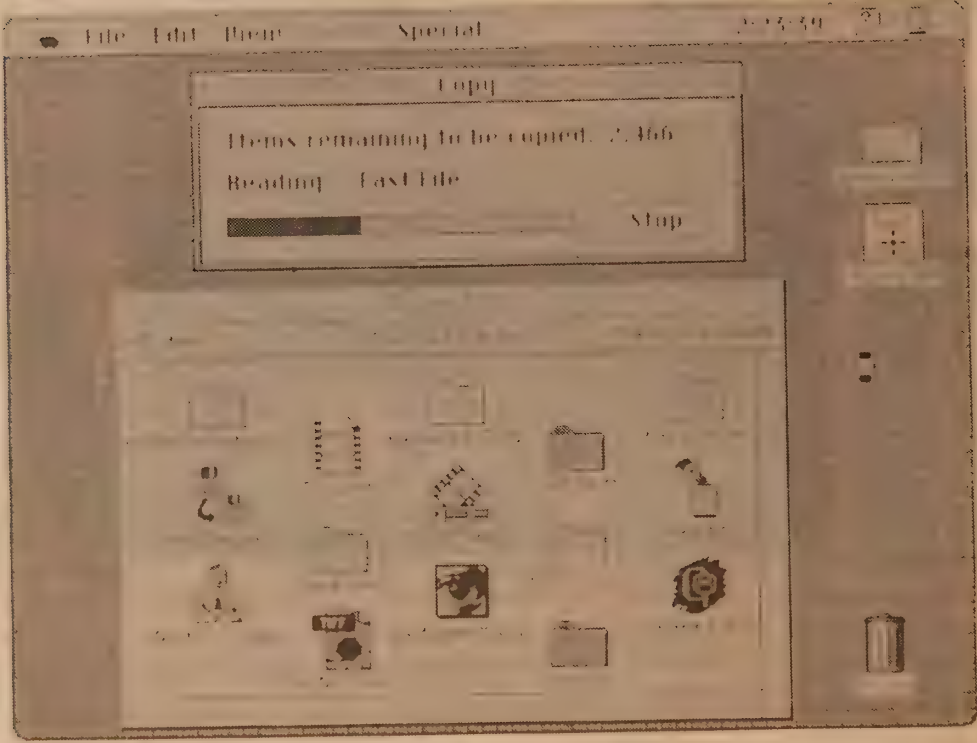

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the future of business-based multimedia and CD-ROM products. (Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA 02142. 617/577-8500)

Macintosh Hardware Reviews

DESKTAPE

Manufactured By: Optima Technology, Inc.
List Price: $349 (DAT version reviewed, versions for other tape drives available)
Reviewed By: Matthew Leeds

Removable media drives are great. Purchase another cartridge or disc and you've got from 40MB to 600MB of new storage. It's less expensive than buying a new hard drive, but it's not cheap. You'll pay between $0.20 and $1.50 a megabyte. DeskTape takes this concept one step further, letting you use a tape drive as a mountable, removable storage device. You can fit up about 2GB on a DAT tape. With current DAT tape prices, that's about a penny a megabyte.

DeskTape is a system extension with a control panel interface. It uses a form of copy protection in that you must "install" a key from an included tape. Keys can be "deinstalled" back to the tape, and there are three keys on the tape. Once installed, DeskTape lets you copy files to and from the tape by dragging the file icons from the Finder, just like a hard drive.

There are some differences. Speed for one. While much faster than a floppy, there were some very noticeable delays while working with files on a DeskTape volume. You can't edit files stored on tape; you must copy them to a hard drive, edit them, then copy them back. You can't run applications from the tape. You can delete files from the tape, but you don't get back the space they took up since data is written serially to the tape. There are some limits to the number of files you can store on a tape. The directory for the tape is buffered on your hard drive (requires between 5MB and 10MB on average).

I also ran into serious problems when I tried to play a QuickTime movie from tape. The first part of the movie played fine (due to the memory buffer set aside by DeskTape), but shortly into the movie the frame rate dropped to a new frame every ten seconds or so.

DeskTape is an alternative to using a backup program to save data to tape, and offers a cost-effective solution to removable storage, if you can live with its limitations. (Optima Technology, Inc., 17526 Von Karman, Irvine, CA 92714. 714/476-0515)

PROCOM MACCD STATION

Manufactured By: ProCom Technology
List Price: $449
Reviewed By: Michael Robin

CD-ROM drives seem to be appearing everywhere these days, serving a variety of markets—business, home office, education, multimedia, and entertainment.

The MacCD Station 2B, from ProCom Technology, is targeted, though not exclusively, at the home office and educational markets. It seeks to compete with Apple's CD Multimedia Kit in price and performance.

It is built around the NEC double-speed CD-ROM drive, featuring an easy tray load mechanism similar to an audio stereo CD player. As a multimedia station it includes a pair of external, battery powered speakers, headphones, and the ability to play audio CDs while you are working at your computer. In addition, it has QuickTime compati-

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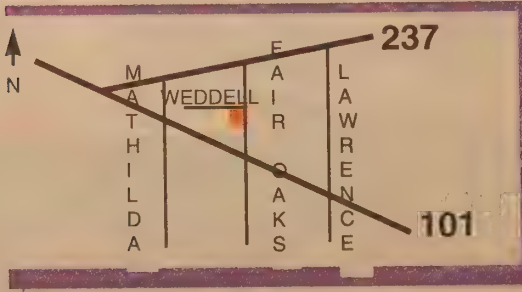

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bility and supports the Kodak PhotoCD Multisession format.

Like most CD-ROM drives in the stores, the MacCD Station comes bundled with CD-ROM titles, which include Compton's Interactive Encyclopedia, Mozart: Dissonant Quartet from Voyager, Sherlock Holmes, Consulting Detective from ICOM Simulations, and several others.

ProCom has put together a solid package for you to enter the world of CD-ROMs. Double-speed drives are currently the baseline standard that the CD-ROM software is being written for. Although triple- and quadruple-speed drives are beginning to appear, a double-speed drive should meet the vast majority of your needs for the foreseeable future.

My only complaint with the MacCD Station was that its documentation is too sparse. For example, the User's Guide does tell you to plug the speaker into the jack on the front of the drive, but I could not find where it tells you that to get both speakers to work the right speaker plugs into the left one. But, I did figure this out after looking everywhere to fit the speaker's odd two-prong plug.

The real question of whether you *need* a CD-ROM drive is a separate question that only you can answer. CD-ROM discs are excellent for accessing large volumes of information, such as an encyclopedia, unabridged dictionary, or business documentation. On the entertainment and educational front, I have mixed feelings. Some of the software I tried was just too slow to feel interactive and engaging, poorly designed, and consisting of weak, quickly repackaged content. (ProCom Technology, Inc., 2181 Dupont Dr., Irvine, CA 92715. 714/852-1000)

Macintosh Software Reviews

CD-Q PLUG-IN FOR PHOTOSHOP

Published By: The Human Software Co.
List Price: $95
Reviewed By: Matthew Leeds

Photoshop and PhotoCD are a great combination. For around a dollar an image you get great high-resolution scans of your photographs that you can use in Photoshop. However, since the files are so large, doing any kind of processing on them takes a lot of time. If you're planning on moving them to four-color output, you'll need to spend time on converting them to CMYK, unsharp masking, adjusting the black levels or grey component replacement (GCR), color correcting, and other manipulations.

The CD-Q plug-in from The Human Software Company can dramatically shorten the time you spend on these processes. It works with Photoshop and any other program that supports Photoshop plug-ins. It is an Acquire module that can bring a PhotoCD image in as a greyscale, RGB, or CMYK file. It lets you rotate, mirror, crop, and set the resolution of the file before you acquire it. You also can set the black density, adjust the GCR, adjust the CMYK curves (and preview the results), set the sharpness, and check for out-of-gamut colors.

In addition, CD-Q now supports the PhotoCD Pro format. You can now have your 2.25" x 2.25" or 4" x 5" negatives and transparencies scanned. In addition, the Pro format supports a new, higher resolution of 4096 x 6114 pixels.

There is a visible difference to images acquired via CD-Q rather than just opened directly in Photoshop. The ability to preprocess an image during the acquire process can easily speed up the production process for image editors and other prepress workers. (The Human Software Co., 14407 Big Basin Way, PO Box 2280, Saratoga, CA 95070)

CYBERMESH

Published By: Knoll Software
List Price: $49
Reviewed By: Matthew Leeds

Learning to speak a foreign language requires taking a part of your brain and rotating it ninety degrees. Once you make the shift, the process suddenly becomes much easier. Working with CyberMesh is very much the same.

CyberMesh is a Photoshop plug-in that converts grayscale images to DXF files (used by 3-D programs to describe objects). The gray levels are interpreted as height values, with black as the lowest and white as the highest. These values can be mapped to a rectangular, cylindrical, or spherical space. For each pixel a polygon is created.

The tool set in CyberMesh is simple. You can rotate and scale the model, subsample the grayscale image to reduce the number of polygons, and choose the preview mode. Some simple controls over the relative scaling of values is also provided, but the bulk of the work is done with standard Photoshop tools while building the grayscale image.

You can use CyberMesh to build terrain maps, model geometric shapes, design strange landscapes, or anything else you can envision that starts as a grayscale image and ends up as a 3-D model. It's a tough mental shift but an interesting one to try. (Knoll Software, PO Box 6887, San Rafael, CA 94903)

PHOTO CD ACCESS PLUS V2.0.1

Published By: Eastman Kodak Co.
List Price: $49.95
Reviewed By: Matthew Leeds

Kodak has come out with a serious winner here. For under $50 (list price no less), you get a software program that gives you access to images stored on PhotoCD discs, including the new Pro format with image sizes to 4000 x 6000 pixels and film sizes to 4" x 5". You also get a player program that handles Kodak's new Photo CD Portfolio format, a simple interactive, multimedia (I hate that word) format that mixes text, graphics, and sound. While Portfolio discs are not yet common, they may catch on soon since Kodak has finally released authoring tools that support the format.

Access Plus displays images via a contact sheet from which you select the images you want to export. You can save images in TIFF, PICT, and EPS formats. Prior to saving each image you can crop, rotate, and mirror it. You can also work on low-res versions of an image then save a higher-res version with all changes. All color depths and resolutions are supported, as is Kodak's Electronic Printing Systems (KEPS) color management system. A variety of monitor metric files are also included.

I was very impressed with the cropping tool. It was easy to use, very intuitive, and quite powerful. I also liked the ability to open more than one window on an image. This lets you experiment with different cropping and color metric variations to find the one that works best. If you don't own an image processing or paint program that supports Photo CD, Access Plus is an excellent choice for accessing image files in that format. (Eastman Kodak Co., 343 State St., Rochester, NY 14650)

Multimedia Software Reviews

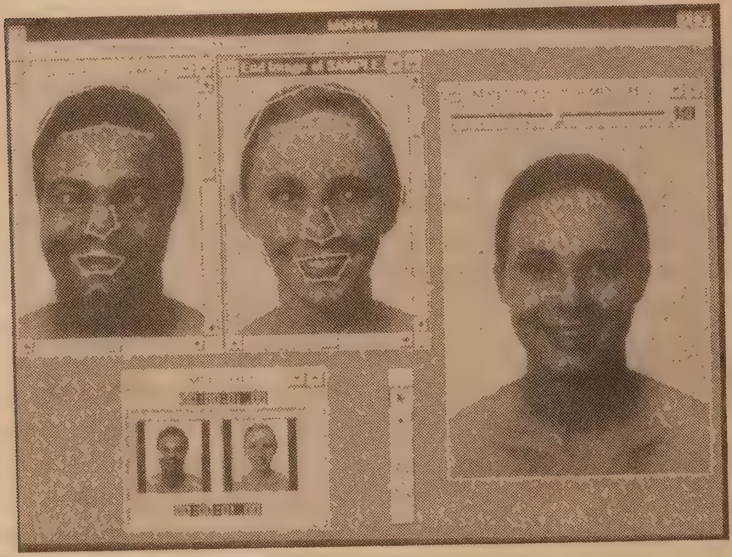
MORPH FOR WINDOWS 1.5

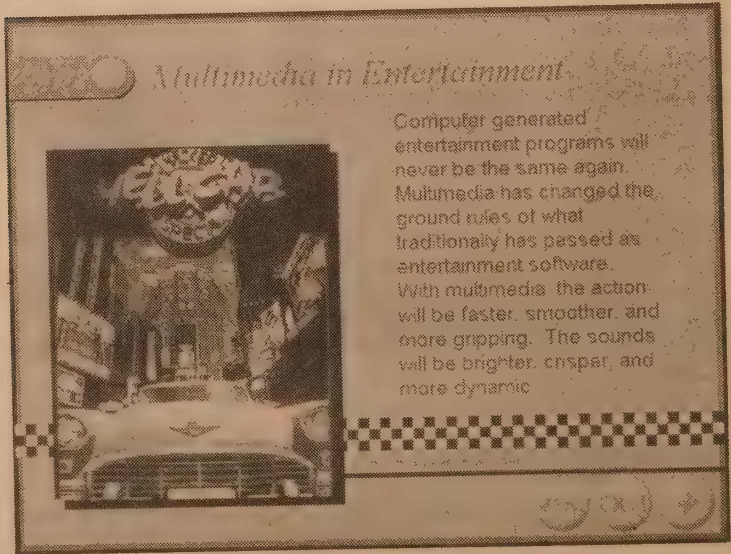
Published By: Gryphon Software
List Price: $169
Reviewed By: Pamela Mason

Art student Tom Brigham's obsession with taking a photograph of one object and turning it into another gave birth to the technology known as morphing. He introduced his technique at SIGGRAPH 1982 where he turned a woman into a lynx! Gryphon Software's Morph 1.5 brings this morphing technology to the Windows environment. You've seen it used on MTV in Peter Gabriel's "Kiss a Frog" video and in numerous commercials, movies, and magazines. Morph is quick and easy to learn and use. Since I am about to have a baby I morphed an image of my husband with one of myself in a scientific experiment to see what our child might look like! Besides all the fun you can have, there are many practical applications for Morph. You could, for example, create a marketing demo and morph an old product version into a new one.

Improvements from v1.0 to 1.5 include warping capabilities: You can stretch and distort an image as if it were on a sheet of rubber or do facial caricatures and change features. Also added is dynamic morphing—the ability to morph two separate sets of moving images into one another. (Remember the commercial where the moving car turns into a running tiger?)

Source images can be frame captures, scanned images, or any of the most commonly used file formats. The only restriction is that both source images must be the same size in pixels. The morph movies are saved in either Video for Windows AVI format, FLIs, FLCs, or individual frames. I did find placing the control points for creating the dissolve between the two images to be a bit tedious. The results were well worth the effort though, when I saw the magic of one image transitioning into another.





Multimedia in Entertainment

Computer generated entertainment programs will never be the same again. Multimedia has changed the ground rules of what traditionally has passed as entertainment software. With multimedia the action will be faster, smoother, and more gripping. The sounds will be brighter, crisper, and more dynamic

Top right: one image transitions into another in Morph 1.5; bottom right: learn basic multimedia terms and concepts with Professor Multimedia.

Throughout the manual potentially confusing terms are explained clearly. (It is possible to write computer documentation that can both educate and make the product easier to use!) I particularly like the explanation of how to calculate image size to determine how much memory you need. (Hmm, does this mean if you get a memory error in Windows you might actually understand why?)

Morph is maturing nicely with this latest version and is hard to beat at this price. (Gryphon Software Corp., 7220 Trade St., Suite 20, San Diego, CA 92121. 619/536-8815, ext. 227)

PROFESSOR MULTIMEDIA

Published By: Individual Software
Level: Beginning
List Price: $59.95
Reviewed By: Pamela Mason

Professor Multimedia is a hands-on, interactive CD-ROM filled with sound, animation, video clips, and graphics for learning basic multimedia terms and concepts.

Especially useful are the sections "Making a Multimedia Presentation" and the MPC Standard definitions and overview, as the choices and terminology can be very confusing to those making their first multimedia system purchases. It clarifies the differences between MPC and MPC2 standards and outlines the distinctions between buying a bundled MPC computer system versus the path of upgrading your current system to meet MPC standards. Also helpful are the software demos and exercises on how to use various multimedia development software packages.

The CD-ROM's categories are broken down into Pizzaz (more of a fizzle, the other categories are more interesting on their own without this "preview"), What is Multimedia?, Everyday Multimedia, and Multimedia in Business. Each of these topics then presents related subcategories. The user interface is nicely designed and menus and icons for the most part are easily navigable, although it's not always clear when one segment is actually finished and you can move on. (Text prompts in addition to the graphical click-on icons would be helpful here.)

Professor Multimedia is very much for the novice and, as such, is a fun introduction, but no more than a basic primer with room to grow. (Individual Software, Inc., 5870 Stoneridge Dr., #1, Pleasanton, CA 94588-9900. 510/734-6767)

VTK PLUG IN PACK

Published By: Abbate Video
For: Macintosh
List Price: $99
Reviewed By: Matthew Leeds

Premiere is a great QuickTime video editing environment, but you've still got to first find and digitize the video segments you want to use. Constantly moving between the mouse and a remote control to fast forward, pause, rewind, and digitizing more than you need at the beginning

Continued on page 317

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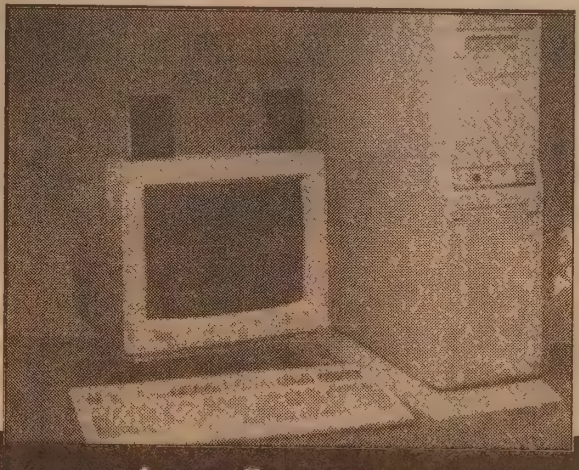

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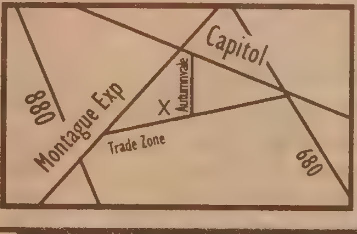

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IBM 486SLC2-50C ISA	158	318	528	568	698	768	868	908	978
486DX2-66C ISA	378	528	748	788	918	988	1,088	1,128	1,198
486DX-50/128C ISA	374	518	744	784	914	984	1,084	1,124	1,194
486DX2-50C ISA	268	408	638	678	808	878	976	1,018	1,088
486DX-40/128C ISA	258	398	628	668	798	868	968	1,008	1,078
486DX-33C ISA	228	378	598	638	768	838	938	978	1,048
486SX-33C ISA	148	294	518	558	688	758	858	898	968
486SX-25C ISA	118	258	488	528	658	728	828	868	938
486SLC-33 ISA	78	234	448	488	618	688	788	828	898
386DX-40/64C	84	228	454	494	624	694	794	834	904
386SX-40	58	214	428	468	598	668	768	808	878

* **BASIC SYSTEM CONFIGURATION:** Motherboard & CPU, 1MB memory installed, 1:1 2HD/2FD controller with 2S/1P/1G. 1.2MB or 1.44MB Floppy Drive, Internal Clock/Calendar, Enhance Case with Power Supply, and 101-Key Enhanced Keyboard.

BEST MULTIMEDIA SYSTEMS

- 4MB High Speed RAM
- 1.2MB & 1.44MB Floppy Drive
- VLB IDE controller w/2S/1P/1G
- 200MB Fast IDE Hard Drive
- Trident / Cirrus Logic VLB w/1MB
- 14" SVGA .28 Color Monitor
- Medium Tower Case w/Power Supply
- Focus 2001 Keyboard
- Double Speed CD-ROM
- Deluxe Speakers
- Sound Blaster Pro Deluxe
- Free CD Deluxe Pak (4 Titles)

386DX-40/128K ISA	**$1,138**
486DLC-40/128K VLB	**$1,218**
486SLC2-66/128K VLB	**$1,308**
486SX-25/128K VLB	**$1,208**
486DX-33/128K VLB	**$1,298**
486DX2-50/128K VLB	**$1,338**
486DX2-66/128K VLB	**$1,448**
Pentium-60/256K VLB	**$2,018**
Pentium-66/256K VLB	**$2,118**

UPGRADES

250MB Hard Drive	Add $20
340MB Hard Drive	Add $60
420MB Hard Drive	Add $80
540MB Hard Drive	Add $170
14" Non-Interlaced Monitor	Add $20
15" Non-Interlaced Monitor	Add $100
17" Non-Interlaced Monitor	Add $380

Best Prices in Town!

DELUXE SYSTEMS

386SX-40	788
386DX-40/64K	798
486SLC-33 ISA	818
486SX-25/128K	858
486SX-33/128K	888
IBM 486SLC2-50 ISA	888
486DX-33/128K	948
486DX-40/128K	968
486DX2-50/128K	988
486DX-50/128K	1,098
486DX2-66/128K	1,118
486 DX-33/128K NICE EISA VLB	1,158
486DX2-66/128K NICE EISA VLB	1,288
IBM 486SLC2-66/64K VLB	958
486DLC-33/128K VLB	868
486DLC-40/128K VLB	888
486DX-33/128K VLB	958
486DX-40/128K VLB	978
486DX2-50/128K VLB	998
486DX-50/128K VLB	1,108
486DX2-66/128K VLB	1,128
IBM 486 BL-75/256K VLB	1,158
ORCHID 486DX2-66/256K VLB	1,258
486DX2-66/256K PCI	1,318
Pentium P5-60/512K VLB	1,628
Pentium P5-66/256K VLB - PCI	1,878
Pentium P5-90/256K VLB - PCI	2,198

SYSTEM CONFIGURATION

- Motherboard w/CPU
- 4MB RAM 70NS
- 170MB Fast Hard Drive
- 1.2MB and 1.44MB Floppy Drive
- IDE 2HD/2FD Controller w/2S/1P/1G
- 512KB SVGA Card
- 14" SVGA .28 Color Monitor
- 101-Key Enhanced Keyboard
- Enhanced Case w/Power Supply
- Microsoft Compatible Mouse w/Pad

UPGRADES

200MB Hard Drive	Add $20
250MB Hard Drive	Add $40
340MB Hard Drive	Add $70
420MB Hard Drive	Add $90
540MB Hard Drive	Add $180
14" Non-Interlaced Monitor	Add $20
15" Non-Interlaced Monitor	Add $100
VLB IDE Controller	Add $10
ATI Ultra Pro PCI w/2MB VRAM	Add $300
16BIT SVGA Card w/1MB	Add $20
Window Accelerator w/1MB	Add $20
Cirrus Logic/ Trident VLB w/1MB	Add $40
Orchid Fahrenheit 1280	Add $100
Diamond S.S. Pro VLB w/1MB	Add $70
250MB Tape Back-up	Add $134
16BIT Ethernet Card	Add $34
Deluxe Speakers	Add $10
Mitsumi / Sony CD-ROM w/Card	Add $120
Double Speed CD-ROM w/Card	Add $140
Sound Blaster Pro Deluxe	Add $80
CD Deluxe Pak (4 Titles)	Add $24

BEST BUY NOTEBOOKS

- **4MB RAM**
- **120MB HARD DRIVE**
- **1.44 FLOPPY DRIVE**
- **1S / 1P**
- **BUILT-IN TRACKBALL**
- **BATTERY PACK**
- **CARRYING CASE**

Super Sales	VGA Mono (PCMCIA Add $160)	PCMCIA Dual Scan Color	PCMCIA Active Matrix Color
486SX-25	$1,248	$1,908	$2,858
486SX-33	1,278	1,928	2,878
486DX-33	1,428	2,088	3,048
486DX2-50	1,448	2,118	3,078
486DX2-66	1,558	2,228	3,188

UPGRADES

Microsoft DOS 6.2	Add $50
8MB RAM	Add $200
200MB Hard Drive	Add $100
340MB Hard Drive	Add $230
Internal Battery Pak	Add $95
Internal Fax Modem (9648/24)	Add $124
Pocket Fax Modem (96/24)	Add $90
Docking Station	Add $398

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- Made in USA Motherboard
- Power Saving Green PC
- 6 Buffer Enhanced Bus Master VLB-PCI
- AMI Flash BIOS
- 64-Bit Data Bus Memory System
- AMP Socket 4 ZIF Socket
- 8MB High Speed RAM
- TEAC 1.2MB & 1.44MB Floppy Drive
- VLB IDE controller w/2S/1P/1G
- Orchid Fahrenheit VLB w/1MB
- 200MB Fast IDE Hard Drive
- Focus 2001 Keyboard
- 15" Non-Interlaced SVGA Monitor
- Medium Tower Case w/Power Supply

Pentium P5-60/256K	**$2,198**
Pentium P5-66/256K	**$2,298**
Pentium P5-90/256K	**$2,598**

UPGRADES

340MB Hard Drive	Add $60
420MB Hard Drive	Add $80
540MB Hard Drive	Add $170
ATI Ultra Pro PCI w/2MB VRAM	Add $300
Diamond Viper VLB 2MB	Add $220
Viewsonic 17G Monitor (Green)	Add $480

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Medium Tower Case w/230W Power Supply	68
Full Tower Case w/250W Power Supply	88
UPS 400VA / 600VA / 900VA	170 / 250 / 360

CD-ROM / MULTIMEDIA

Creative Labs	
Sound Blaster Pro	$58
Sound Blaster Pro Deluxe	76
Sound Blaster Pro 16 Basic	98
Sound Blaster Pro 16 MCD	108
Discovery CD 8 Upgrade Kit	238
Discovery CD 16 Upgrade Kit	298
Edutainment CD 16 Upgrade Kit	398
Diamond Sonic (AT / SCSI)	94 / 208
Mediavision Jazz 16 (AT/SCSI)	98 / 108
Mediavision Pro Audio Spectrum 16	98
Mediavision Pro Audio Studio 16	138
Orchid Gamewave Sound Card (AT)	138
Orchid Soundwave Sound Card (AT)	170
Chinon CDS535 (Int.) SCSI	294
Mitsumi CD-ROM (350MS) w/Card	112
Mitsumi CD-ROM (Double Speed) w/Card	138
NEC CD-ROM 84 (SCSI) Internal	318
NEC 3Xi (510) Triple Speed SCSI Internal	338
Orchid CDS3110 (Double Speed) w/Card	158
Panasonic CD-562 (Double Speed) w/Card	148
Phillips CD-ROM w/Card	88
SONY CD-ROM (Double Speed) w/Card	144
TEXEL	
DM3021 (SCSI) Internal	158
DM3028 (SCSI) Internal	298
Toshiba XM-3401B (SCSI) Int / Ext	298 / 340
Trantor SCSI Host w/Driver	50
Audio Pak (Sound Card, Speaker, Joystick, Earphone)	52
Deluxe Speakers	8

CD SOFTWARE TITLES

American Business Phone Book-1992	15
Animals v1.0 DOS	12
Arthur's Teacher Trouble	19
Atlas Pak v3.1 World/US	16
Battle Chess DOS	15
Beyond the Wall of Stars	19
Beauty & Beast MPC	12
Bring the World to Your Senses	11
Campton's Encyclopedia MPC	48
Carmen San Diego DOS	18
CD Deluxe Pak (Chess Master 3000, Mavis Teaches Typing, US Altas, World Atlas)	24
CD Game Pack II DOS	15
Chess master 3000 MPC	15
Composer Quest MPC	20
Desert Storm MPC/MAC	16
Dictionary of the Living World	22
Dinosaur Adventure	19
Family Choice/Britannica DOS	15
Family Doctor DOS/MAC	16
Family Education Collections DOS	16
Great Cities-Vol 1 / Vol 2 DOS	16
Jets & Props MPC	18
Jones in Fast Lane MPC	14
King's Quest V DOS	11
Kodak Photo CD Access	12
Language of the World	18
Loom From Lucas Film DOS	14
Macmillan Dictionary For Children	16
Mantis Experimental Fighter	14
Mario is Missing/World Atlas 3.2	15
Mavis Teaches Typing MPC	14
Mayo Clinic Family Health	16
Micropose Collection 4 Games	17
Microsoft Bookshelf MPC	50
Microsoft Bookshelf, Mixed Up Mother Goose King's Quest V, Thunder-Media Sound Library	58
Microsoft Works MPC	50
MIDI Music Shop	15
Mixed-up Mother Goose MPC	14
Monkey Island DOS	13
MPC Audubon's Mammals	14
National Geographic Mammals DOS	18
National Park	16
PC SIG 12th Edition	18
Peter & Wolf MPC	12
Playing with Language (English)	17
Playing with Language (French)	17
Playing with Language (German)	17
Playing with Language (Japanese)	17
Playing with Language (Spanish)	17
Publish It 2.0 DOS	16
Secret Weapons/Luftwf DOS	14
Sleeping Beauty	13
So Much Shareware II DOS	13
So Much Shareware III DOS	17
Sound Library MPC	11
Space Quest IV By Sierra DOS	16
Space Shuttle	17
Sport's Best (3 in 1) DOS	17
Stellar 7 DOS	14
Survey of Western Art MPC	22
The Right College	17
Time Almanac 1991 DOS	13
Time Table of History DOS	14
Tool Works Reference Library	18
Total Baseball DOS/MAC	16
US Atlas v3.1 MPC	13
US History DOS/MAC	16
USA Wars: Civil War DOS/MAC	22
USA Wars: Vietnam DOS/MAC	22
USA Wars: WW II DOS/MAC	22
USA Wars: Korea	22
Willy Bearnish The Adventure	15
Wing Command & Ult VI DOS	15
World Atlas v3.2 MPC	11
World View DOS	10

CONTROLLERS

IDE 2FD/2HD with 2S/1P/1G	$11
IDE with I/O for VESA Local Bus	22
Enhanced I/O (2S/1P) w/16550 UART Chip	28
IDE I/O (2S/1P) w/16550 UART Chip	38
VLB IDE I/O (2S/1P) w/16550 UART Chip	48
Adaptec	
1542CF (SCSI)	164
1542CFK w/Kit (SCSI)	228
2742 EISA (SCSI)	244
2742TK EISA (SCSI)	344
2742T EISA (Twin SCSI)	278
2842VLK EISA VLB (SCSI)	258
Asus EISA (SCSI)	248
Asus PCI (SCSI)	78
BusLogic 445S VLB (SCSI)	228
BusLogic 742K EISA (SCSI)	238
DTC 2290 EISA IDE	116
DTC 2280 ISA IDE	14
DTC 2278 VLB IDE	34
Promise DC-200 IDE Cache Controller	88
Promise DC-4030 VLB IDE Cache Controller	104

HARD DRIVES

120MB 19MS IDE	148
170MB 17MS IDE	172
212MB 15MS IDE	188
250MB 15MS IDE	204
270MB 12MS IDE	216
340MB 12MS IDE	238
420MB 12MS IDE	258
540MB 12MS IDE	348
200MB 15MS SCSI	228
340MB 13MS SCSI	318
540MB 12MS SCSI	388
1.0GB 13MS SCSI	698
2.0GB 13MS SCSI	1,078

KEYBOARDS

101 Enhanced Keyboard	$13
Focus	
FK2001 101-Key Click	31
FK8000 w/Calculator	36
FK9000 Programmable	50
Keytronics 101-Key Enhanced	25
Mitsumi 101-Key Enhanced	14
Maxiswitch 101-Key Enhanced	22
Maxipro II Programmable	52
Northgate	
OMNI 101 NI / 102	63 / 63
OMNI Ultra T or F	84

MATH COPROCESSORS

387DX-40 (Tube/Box)	$30 / 48
387DX-33	42
387SX-33	40
387SX-25	38

MODEMS & FAXES

Fax Modem (9648 Fax/2400 Modem)	$28
Fax Modem (9600 Fax/2400 Modem)	37
Fax Modem (14,400 Fax/14,400Modem) Int.	84
Fax Modem (14,400 Fax/14,400Modem) Ext.	108
Pocket Fax Modem (9648/24)	76
Pocket Fax Modem (14,400/14,400)	176
Hayes 14400 Fax Modem Int/Ext	148 / 168
Intel 14.4 Fax Modem Int/Ext	154 / 178
US Robotics	
Sportster 14400 Modem Int	108
Sportster 14400 Modem Ext	128
Sportster 14400 Fax Modem Int	110
Sportster 14400 Fax Modem Ext	130

MONITORS

14" Mono	$70
14" VGA Mono	88
14" Super VGA 1024•768 .39	180
14" Super VGA 1024•768 .28 Int	200
14" Super VGA 1024•768 .28 NI	218
15" Super VGA 1280•768 .28	290
17" Super VGA 1280•768 .28	578
CTX	
14" Super VGA 1024•768 .28 Int	228
14" Super VGA 1024•768 .28 NI	242
CMS1561 15" 1024•768 .28	318
CMS1561LR 15" 1024•768 .28	328
CPS1760LR 17" 1280•1024 MPR II	638
Hitachi	
CM1584MV 15" 1280•1024 .28	430
CM2095 20" 1280•1024 .31	1,238
MAG	
15F 15" 1280•1024 .28	428
17F 17" 1280•1024 .26	718
NANAO	
F550I 17" 1280•1024 .28	838
F550IW 17" 1280•1024 .28	938
T560I 17" 1280•1024 .25	1,438
F560IW 17" 1280•1024 .26 TRIN	1,178
T660I 20" 1280•1024 .31	2,144
F760IW 21" 1280•1024 .31	1,968
NEC	
3V 15" 1024•768 .28	460
3FGe 15" 1024•768 .28	558
4FGe 15" 1024•768 .28	614
5FGe 17" 1024•768 .28	968
5FGp 17" 1280•1024 .28	1,088
SONY	
1430 14" 1024•768 .25	508
1604S 17" 1024•768 .25	858
1730 17" 1024•768 .25	920
17SE 17" 1600•1280 .25	1,058
2036 20" 1280•1024 .30	1,798
2038 20" 1600•1280 .30	1,898
VIEWSONIC	
4E 14" 1024•768 .28 Green	252
6E 14" 1024•768 .28 Green	270
14E 14" 1024•768 .28	308
15E 15" 1024•768 .28	360
15 15" 1280•1024 .28 Green	422
17 17" 1600•1280 .28	920
17G 17" 1280•1024 Green	768
20 20" 1600•1280 .28	1,468
21 21" 1600•1280 .26	1,718

MOUSE

3-Button Microsoft Compatible	$7
Logitech	
Cordless	81
Mouseman Serial (OEM) / Bus	32 / 62
Trackman	74
Scanman 256	198
Microsoft Defender Serial	22
Microsoft Mouse Serial	28
Microsoft Mouse Bus	54

NETWORK

8 BIT Ethernet Cards (NE1000 Compatible)	$32
16 BIT Ethernet Cards (10 Base-T/Coax)	34
16 BIT Ethernet Cards (3-in-1 Combo)	38
16 BIT Ethernet Cards (Pocket for Notebook)	98
16 BIT Busmaster (NE2100 Compatible)	74
ANSEL	
P-NS2000-TA 10 Base-T & AUI	86
P-NS2000-3 10 Base-T & 2 & AUI	98
ARCnet	
4-Port Passive Hub	12
8-Port Active Hub	98
Bus Topology 8 BIT ISA Card	40
Bus Topology 16 BIT ISA Card	45
Star Topology 8 BIT ISA Card	40
Star Topology 16 BIT ISA Card	45
BootROM	
8 BIT or 16 BIT Auto Boot PROM	12
Hubs and Repeaters	
4-Port 10 Base T HUB	108
12-Port 10 Base T HUB	278
16-Port 10 Base T HUB	348
2 BNC Ethernet Repeater	178

PRINTERS

Citizen	
GSX-190 (9-Pin) / GSX-220 (24-Pin)	$158 / 178
GSX-230 / GSX-240 (24-Pin) Quiet	238 / 288
GSX-145 (24-Pin) Wide	358
Color Option for Citizen Printers	48/68
Panasonic	
KX-P1150 (9-Pin)	138
KX-P2023 (24-Pin) Quiet	198
KX-P2123 (24-Pin) Color Capacity	236
KX-P2124 (24-Pin) Color Capacity	318
KX-P2624 (24-Pin) Quiet Wide	398
Color Upgrade Kit KX-PCK11	54

TAPE BACKUP

Conner 250MB Int	$132 (w/tape ...$142)
Colorado	
DJ-10 Tape Back-up 120MB	86
DJ-20 Tape Back-up 250MB	147
KE-9 Ext. Kit for DJ-10/Dj-20	62
Tape QIC-80 3M DC2120	15
JT-10 Trakker 120MB Ext	278
JT-20 Trakker 250MB Ext	318
PT-10 Power Tape 1.0GB Int	648
PT-25 Power Tape 2.4GB Int	928
PT-50 Power Tape 4GB Int	1,148
Tandberg	
1GB w/Controller (SCSI)	668
2GB w/Controller (SCSI)	768

VGA CARDS

VGA256K / SVGA 512K 16 BIT	$26 / 38
SVGA 1MB 1024•768 16 BIT	55
Window Accelerators w/1MB	55
Cirrus Logic VLB w/1MB	68
Trident VLB w/1MB	68
ATI	
Graphics Ultra 1MB w/Mouse	150
Graphics Ultra Plus 2MB (VLB)	268
Graphics Ultra Pro ISA 1MB/2MB DRAM	130/180
Graphics Ultra Pro VLB 1MB/2MB DRAM	130/180
Graphics Ultra Pro EISA 1MB/2MB DRAM	140/230
Graphics Ultra Pro VLB 2MB (VRAM)	274
Graphics Ultra Pro EISA 2MB (VRAM)	328
Graphics Ultra Pro PCI 2MB (VRAM)	298
Diamond	
Speed Star Pro 1MB (ISA / VLB)	98
Stealth 24 VLB 1MB	128
Stealth PCI 1MB / 2MB	174 / 218
Stealth Pro VLB 1MB (VRAM)	234
Stealth Pro VLB 2MB (VRAM)	294
Viper 2MB (VLB / PCI)	328 / 328
Genoa 8500 VLB 1MB	90
Orchid	
Celsius 1MB VLB	128
Celsius 2MB VLB	180
Fahrenheit 1MB (S3-801) ISA	120
Fahrenheit 1MB (S3-805) VLB	134
Fahrenheit 1MB (S3-801) VA ISA	130
Kelvin VLB (64-Bit) 1MB / 2MB	148 / 188
Kelvin PCI (64-Bit) 1MB / 2MB	148 / 188

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1. One year parts and labor warranty on systems.
2. Knowledgeable technical support engineers in service.
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○SuperMicro **P5 Pentium** P54VL-PCI 512K L2 15ns Cache Motherboard with 4 PCI's/5 16-Bit ISA's/2 VLB Extensions, Power Saving Mgmt, Flash AMI BIOS
○**32MB** 70ns 72Pin SIMM RAM (16MB x 2pcs)
○16Bit IDE/FD 2S/1P/1G with HiSpeed 16550UARTs, 2.88MB Support
○**Adaptec 2940 PCI Fast SCSI-2 Controller**
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○**1.08GB Quantum Fast Wide SCSI-3 512K Empire 1080S HD**
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○**KFC 17"** 1280X1024NI 0.26DP Multisync Digital Monitor
○Premium Digital Full Tower 250W PS
○101 Keytronic Keyboard

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A combination of state of art components makes this PC a super-super Computer. We push the technology towards the edge! This ultimate PC brings out all the latest technology you, a power user, can desire. Pentium 90/100MHz computing power combined with latest 132MB/sec throughput PCI bus architecture, Fast Wide SCSI-3 Harddrive, and the latest Ultimate performance ATI Graphic Turbo Pro! No way you can find a PC builder dare to build a super PC like this at this price. No way!

UMiracle P5 PCI 60/66MHz

○UMiracle P5 PCI 256K L2 Cache Motherboard with 4 PCI's/4 ISA slots, Onbrd PCI NCR Fast SCSI-2
○**16MB** 70ns 72Pin SIMM RAM (8MB x 2pcs)
○16Bit IDE/FD 2S/1P/1G with HiSpeed 16550UARTs, 2.88MB Support
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○**Diamond Viper PCI** 2MB VRAM
○**KFC 17"** 1280x1024NI 0.26DP Multisync Digital Monitor
○Premium Digital Medium Tower 230W PS
○101 Keytronic Keyboard

60MHz $3873
66MHz $3973
UMiracle

Dare to Compare

[illegible]

- Processor	77.01
- Video	1524.52
- Disk	1813
DOSMark	870.66
Graphics WinMark	20.7
Disk WinMark	1490

Test result based on our 66MHz system. See your PC Magazine for comparsion.

Intel Premier P5 PCI 60/66MHz

○Intel Premier P5 PCI 256K L2 Cache Motherboard with 3 PCI's/5 ISA slots, Onbrd PCI IDE, FD, HiSpeed I/O
○**8MB** 70ns 72Pin SIMM RAM (4MB x 2pcs)
○1.2M & 1.44MB TEAC Floppy Drives
○**540MB** Western Digital IDE WDAC2540 HD
○**Diamond Viper PCI** 2MB VRAM
○**Viewsonic 15"** 1280x1024NI 0.26DP Green Monitor
○Premium Digital Mini Tower 230W PS
○101 Keytronic Keyboard

60MHz $2799

READY TO GO

Dare to Compare

[illegible]

- Processor	68.82
- Video	1461.31
- Disk	1310.00
DOSMark	761.45
Graphics WinMark	19.00
Disk WinMark	1200

See your PC Magazine for comparsion.

UMiracle 486 ISA PCI

UMiracle

○UMiracle 486 PCI 256K L2 Cache Motherboard with 3 PCI's/4 ISA slots, Onbrd PCI NCR Fast SCSI-2
○**8MB** 70ns 72Pin SIMM RAM (4MB x 2pcs)
○IDE I/O 2HD/2FD 2S/1P/1G
○1.2M & 1.44M TEAC Floppy Drives
○**340MB** Quantum SCSI-2 128K 12ms LPS340S HD
○**Diamond Viper PCI** 2MB VRAM
○**KFC 15"** 1280x1024NI 0.26DP Green Digital Monitor
○Premium Digital Mini Tower 230W PS
○101 Keytronic Keyboard

33SX-$2016
33DX-$2088
40DX-$2107
50DX/2-$2135
66DX/2-$2238
100DX/4-$2528

READY TO GO

Dare to Compare

[illegible]

- Processor	45.75
- Video	1528.63
- Disk	1110.00
DOSMark	600.31
Graphics WinMark	15.4
Disk WinMark	1030

Test result based on our 66MHz system. See your PC Magazine for comparsion.

Bay Area is a great place when it comes to shopping for a computer - Only if you know what you are buying though. Buying from a PC builder who doesn't even know what AUTOEXEC.BAT is means throwing your money away and you will end up with pointing fingers here and there. Buying from a PC Integrator like **UMiracle** means plug and run, peace of mind for your computing life. Afterall, who else cares what those jumpers should be set, whether it is running optimizedly, and how it works with your software? Think smart, think **UMiracle** !

Our Service, Our Commitment

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- Systems marked with "READY-TO-GO" have been pre-built, burn-in tested and are ready to be picked up or delivered within 30 minutes - Please allow more time for minor configuration changes.
- Free delivery area includes local area within 30 minute driving distance. No delivery on weekends. Delivery out of local area will be charged up to $30 freight.
- Most components come with over 1 year manufacturer warranty - First year will be covered by UMiracle. Warranty after the first year will be covered by component manufacturers.
- While-you-wait immediate service should there be any neccessary warranty repair. If we couldn't solve the problem, another system will be built (at our discretion, if purchased within 30 days.)

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☑ Free Local Area Delivery for System Purchase
☑ 1 Year Parts and Life Time Labor Warranty
☑ No-on-hold Expertise LifeTime Technical Support
☑ While-You-Wait Immediate Replacement/Repair Service
☑ 30 Day Money Back Compatibility Guarantee on Systems

you trust to spend thousands of tom build a machine that works?

AIR 486 EISA VLB - EI-Line

READY TO GO

- ○486 AIR-EI 8 EISA/3 VLB 256K Cache Motherboard
- ○**16MB** 70ns 72Pin SIMM RAM (16MB x 1pc)
- ○QAccess Fast Adaptec 6360 VLB SCSI-2 Controller with VLB IDE, FD and 2S/1P/1G
- ○1.2M & 1.44M TEAC Floppy Drives
- ○**1.08GB Quantum Fast Wide SCSI-3 LPS1080S HD**
- ○**Diamond Viper VLB** 2MB VRAM
- ○**KFC 17"** 1280x1024NI Multisync Digital Monitor
- ○Premium Digital Medium Tower 230W PS
- ○101 Keytronic Keyboard

33SX-$3322
33DX-$3394
40DX-$3413
50DX/2-$3441
66DX/2-$3544
100DX/4-$3834

Dare to Compare

PC Bench 8.0 and WinBench 4.0 Result

- Processor	46.51
- Video	1351.86
- Disk	1524
DOSMark	623.14
Graphics WinMark	15.8
Disk WinMark	1240

Test result based on our 66MHz system. See your PC Magazine for comparsion.

AIR 486 ISA VLB - MIS-Line

READY TO GO

- ○486 AIR-MIS ISA VLB 256K Cache Motherboard w/ Integrated Adaptec VLB-SCSI-2, VLB-IDE, I/O
- ○**8MB** 70ns 72Pin SIMM RAM (8MB x 1pc)
- ○1.2M & 1.44M TEAC Floppy Drives
- ○**420MB** Western Digital IDE WDAC2420 HD
- ○**Orchid Fahrenheit 1280+ VLB** S3-805 ChipSet
- ○**KFC 15"** 1280x1024NI Multisync Digital Monitor
- ○Premium Digital Medium Tower 230W PS
- ○101 Keytronic Keyboard

33SX-$1797
33DX-$1869
40DX-$1888
50DX/2-$1916
66DX/2-$2019
100DX/4-$2309

Dare to Compare

PC Bench 8.0 and WinBench 4.0 Result

- Processor	45.37
- Video	3665.02
- Disk	1191
DOSMark	698.17
Graphics WinMark	8.55
Disk WinMark	1040

Test result based on our 66MHz system. See your PC Magazine for comparsion.

AIR Green 486 ISA VLB - SH-Line

READY TO GO

- ○486 Green AIR-SH ISA 3 Slot VLB 256K Cache Motherboard
- ○4MB 70ns SIMM RAM (1MB-30Pinx4)
- ○Fast VLB 32Bit IDE Controller 2HD/4FD w/ 2 Hi-Spd 16550 UART I/O & 2.88MB Support
- ○1.2M TEAC & 2.88M Toshiba Floppy Drives
- ○340MB Western Digital IDE WDAC2340 HD
- ○Cirrus Logic 5428 VLB 1MB Windows Accelerator
- ○KFC 14" 1024X768NI 0.28DP Monitor
- ○Premium Digital Mini Tower 230W
- ○101 Key Enhanced Keyboard

33SX-$1241
33DX-$1313
40DX-$1332
50DX/2-$1360
66DX/2-$1463
100DX/4-$1753

Dare to Compare

PC Bench 8.0 and WinBench 4.0 Result

- Processor	39.85
- Video	4552.25
- Disk	1044.03
DOSMark	633.09
Graphics WinMark	7.87
Disk WinMark	844

Test result based on our 66MHz system. See your PC Magazine for comparsion.

UMiracle 486 Green ISA VLB

UMiracle

- ○486 Green ISA VLB 256K Cache Motherboard
- ○4MB 70ns SIMM RAM (1MB-30Pinx4)
- ○Fast 32Bit VLB IDE Controller with 2S/1P/1G
- ○1.2M & 1.44M TEAC Floppy Drives
- ○340MB Western Digital IDE WDAC2340 HD
- ○Cirrus Logic 5428 VLB 1MB Windows Accelerator
- ○KFC 14" 1024X768NI 0.28DP Monitor
- ○Premium Digital Mini Tower 230W PS
- ○101 Key Enhanced Keyboard

33SX-$1172
33DX-$1244
40DX-$1263
50DX/2-$1291
66DX/2-$1394

READY TO GO

Dare to Compare

PC Bench 8.0 and WinBench 4.0 Result

- Processor	38.13
- Video	4518.43
- Disk	1015.00
DOSMark	609.83
Graphics WinMark	7.19
Disk WinMark	793

Test result based on our 66MHz system. See your PC Magazine for comparsion.

MultiMedia Upgrade

-NEC 3Xi CD-510 SCSI-2 MultiSpin, 190ms, 450KB/S
-Pro Audio Studio 16
-120W Stereo Speakers w/4" Woofer + 2"Tweeter
-10 pieces of Caddies
-Audio Cable

$671

Plus 10% off on any CD-titles

-Toshiba 3401B SCSI-2 MultiSpin, 200ms, 330KB/S
-Pro Audio Studio 16
-TopTek Stereo Speakers 80W Amplified Channels
-10 pieces of Caddies
-Audio Cable

$591

Plus 10% off any CD-titles

-Plextor CD-3028 SCSI-2 MultiSpin, 240ms, 330KB/S
-Pro Audio Spectrum 16
-Media 690 Hi-Fi Stereo Amplified Speakers
-5 pieces of Caddies
-Audio Cable

$465

Plus 10% off any CD-titles

-Panasonic CR-562 MultiSpin, 320ms, 300KB/S
-SoundBlaster16Multi-CD/ASP
-TopTek Stereo Speakers 80W Amplified Channels
-Audio Cable

$412

Plus 10% off any CD-titles

-Panasonic CR-562 MultiSpin, 320ms, 300KB/S
-Sound Blaster 16 Basic
-LabTec CS-550 Stereo Amplified Speakers
-Audio Cable

$296

Plus 10% off any CD-titles

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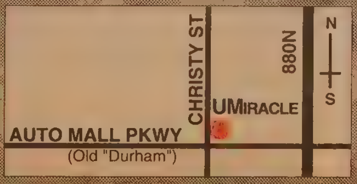

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COMPONENTS/UPGRADES

Add and subtract to make your dream machine!

Motherboard without CPU: (Call for CPU Prices)

386-40DX with AMD CPU 128K	$125
486 UMiracle Green ISA VLB 256K - 3 VLB, upto 32MB by 30Pin, P5 OD suppt, Bus-master, Full Green PC EPA compliance - able to turn off HD, Monitor horizontal Sync, CPU Slow Dn, Award BIOS	$115
486 AIR-SH Green ISA VLB 256K - 3 VLB slots, Upto 32MB by 30Pin, ZIF, P5 OD support, Bus-master, Power Saving Mgmt, U.S. Quality	$120
486 AIR-UL ISA VLB 256K - 8 ISA/3 VLB slots, Upto 32MB onbrd, 64MB with Expansion Board, using 30Pin, ZIF, P5 OD support, Bus-master, U.S.Quality	$160
Memory Expansion Card 32MB for AIR-UL	$90
486 AIR-MI ISA VLB 256K - 3 VLB slots, Upto 128MB by 72Pin, ZIF, P5 OD support, Bus-master, VLB IDE, FD, 2S/P/G, Power Saving Mgmt, U.S.Quality	**$245**
486 AIR-MIS ISA VLB 256K - 2 VLB slots, Upto 64MB by 72Pin, ZIF, P5 OD Support, Bus-master, VLB IDE, FD, 2S/P & VLB SCSI-2 w/ Adaptec 6360 chpset, and EZ-SCSI software driver,U.S.Quality	$305
486 AIR-EI Full EISA VLB - 3 VLB Slots, Upto 256MB by 72Pin SIMM, ZIF, P5 OD Support, Bus-master, 8 EISA/3 VLB slots, U.S.Quality (256/512K)	$340/420
486 Micronics ISA VLB JX-30 256K, VLB IDE, I/O	$450
486 Micronics EISA VL BUS 256K, IDE, 2S/P/G, Full size, Flash BIOS, Upto 64MB by 72Pin	$595
486 ISA PCI 256K - 3 PCI, 5 ISA Slots, ZIF, P5 OD Support, Intel Saturn ChipSet, Upto 128MB by 72Pin SIMM, Bus-master, Dallas onboard Battery, Phoenix BIOS, onboard PCI NCR SCSI-2 Controller, Complete software drivers for OS/2, NT, UNIX	$320
Pentium P5 PCI 256K - 4 PCI, 4 ISA Slots, ZIF, Intel Mercury ChipSet, Upto 128MB by 72Pin SIMM, Bus-master, Dallas onboard Battery, Phoenix BIOS, onbrd PCI NCR SCSI-2 Controller, Complete drivers for OS/2, NT, UNIX	$410
Intel Pentium P5 Premier PCI 256K - 3 PCI/5 ISA slots, Mercury PCI Chipset, Flash ROM BIOS, Upto 128MB by 72Pin SIMM, onbrd PCI IDE, FD, HiSpd I/O, Made by Intel from Ireland	**$410**
SuperMicro P54VL-PCI 512K - 3.3V 90/100MHz P5 support, 4 PCI/2 VLB/5-16Bit ISA slots, ZIF, Bus-master, Upto 128MB by 72Pin, Green PowerSaving, U.S.Made - Highest End You Can Find!!!	**$560**

CPU & Memory: (Prices Subject to Change Daily)

Pentium P5-60/66MHz CPU	$Call
Pentium P5-90/100MHz 3.3V CPU	**$Call**
Intel 486-33SX/33DX/50DX2/50DX/66DX2/**100DX4**	$Call
5V to 3.3V Voltage Regulator for 100DX4 CPU	**$65**
AMD 486-40DX/50DX2/66DX2	$Call
Cyrix 486-33DX/40DX	$Call
8Kx8/32Kx8/128Kx8 Cache Memory	$2/$5/$32
1MB DRAM (44256-70ns DRAMx8pcs)	$40
1MB VRAM (44256-70ns VRAMx8pcs)	$60
1MB RAM SIMM (256K-70ns SIMMx4pcs)	$48
4MB RAM SIMM (1M-70ns SIMMx4pcs)	$Call
16MB RAM SIMM (4M-70ns SIMMx4pcs)	$Call
72Pin 70ns SIMM (4/8/16/32MB)	$170/330/650/1350

I/O Card/Controller Card/Network Card:

Single/Dual Printer Card	$10/15
AT I/O 2S/1P/1G	$12
AT I/O 2S/1P/1G w/ 2 HiSpd UART 16550's	$39
4 Serial Port Card with Cable	$65
16Bit IDE/2FD Controller	$12
16Bit IDE/2FD with 2S/1P/1G	$14
16Bit IDE/4FD 2.88MB support	$29
16Bit IDE/4FD 2S/1P 2.88MB support	$49
16Bit IDE/FD 2S/1P/1G 2.88MB support, HiSpd 16550 UART's on Serial ports	**$59**
IDE Caching Controller Upto 64MB, 2HD/4FD	$65
VLB IDE I/O Controller with 2HD/2FD 2S/1P/1G	$25
VLB IDE/4FD with I/O Support 2.88MB, with 2 HiSpd UART 16550's, 1 Parallel	$69
Promise DC-4030VL-2 VLB IDE w/ 0MB Cache	$120
UltraStor 34F SCSI-2 VLB Bus-Mastering	$235
Adaptec 1522A SCSI FD Controller (Bare)	$80
Adaptec 1522 SCSI FD Controller w/ Kit	$135
Adaptec 1542 Bus-master SCSI FD (Bare)	$185
Adaptec 1542CF Bus-master SCSI FD w/ Kit	$240
Adaptec 2742T RISC-based EISA SCSI-2 Controller w/ Dual Channel supporting 14 HDs, 2.88M	$365
Adaptec 2842VL VLB-to-Fast SCSI-2 Controller w/ 2.88MB Support & Driver Kit	$295
Adaptec 2940 PCI Fast PCI SCSi-2 Controller	**$Call**
AIR QAccess Fast SCSI-2 VLB Controller w/ Adaptec 6360 Chipset and EZ-SCSI Software w/ VLB IDE/FD and 2S/1P/1G	$135
External SCSI-2 Adapter for QAccess/MIS/Any Onboard internal SCSI interface	$30
Ethernet NE2000 Adapter Coaxial/10-Base T	$48
Intel/3 COM/Novell/SMC Network Adapter	$Call

Video Card:

16Bit 512K/1MB Trident SVGA 1024x768	$45/67
16Bit 1MB Tseng-4000 72Hz 32K Color	$75
Tseng-ET4000 VLB 1MB 16.7M Color	$100
Tseng-ET4000-W32 VLB 16.7M Color 1MB/2MB	$125/185
Cirrus Logic 5428 VLB 1MB/2MB	$95/135
SPiDER VLB CL-5426 1MB/2MB	$95/135
SPiDER VLB Plus CL-5428 1MB/2MB	$120/160
SPiDER 64 VLB/PCI CL-5434 2MB/4MB DRAM	**$210/310**
SPiDER Black Widow VLB X15IIT 1MB/2MB	$150/210
SPiDER Black Widow Plus X16IIT VLB / PCI Version 1MB/2MB	**$190/250**
Orchid Fahrenheit 1280 PLUS VLB 1MB/2MB	$145/185
Orchid Fahrenheit VA VLB 1MB/2MB	$165/205
Orchid Kevin 64 Cirrus Logic CL-GD5434 VLB or PCI version 1MB/2MB DRAM	**$185/225**
Orchid Celsius VLB 1MB/2MB	$195/255
Diamond Speedstar Pro VLB 1MB	$110
Diamond Stealth 24 VLB 1MB DRAM	$155
Diamond Stealth Pro VLB 1/2MB VRAM	$255/315
Diamond Viper VLB 2MB VRAM 44M Winmarks	$365
Diamond Viper PCI 2MB VRAM 85M Winmarks	$365
ATI Graphic Ultra Pro VLB Mach32 Engine 2MB VRAM	$315
ATI Graphic Ultra Pro PCI Mach32 Engine 2MB VRAM	$335
ATI Graphic Pro Turbo VLB/PCI 2MB/4MB	**$535/835**
Matrox MGA IMP3V Impression VLB 3MB	**$730**
Matrox MGA II PCI 2MB VRAM	**$450**
Matrox MGA II Plus PCI VRAM 2MB/4MB	**$530/650**

Monitor:

Impression 14" 1024x768x0.39DP	$190
KFC 14" 1024x768x0.28DP	$225
KFC 14" 1024x768NIx0.28DP	$250
KFC 14" 1024x768NIx0.28DP Low Radiation MRPII.	**$320**
KFC 14" Multisync 1024x768NIx0.28DP Digital-Control,Non-Glared	$345
KFC 15" Multisync 1280x1024NIx0.28DP Digital-Control,Non-Glared,Flat-Screen Green Pwr Saving, Screen Shape Contrl	$410
KFC 17" Multisync 1280x1024NIx0.26DP Digital-Control,Non-Glared,Flat-Screen Green Pwr Saving, Screen Shape Contrl	$770
MAG 15F MRPII Green 15" 0.28DP, 1280x1024NI	$475
MAG 17F MRPII Green 17" 0.26DP, 1280x1024NI	$845
Viewsonic 15 15" 0.26DP 1280x1024NI Digi.Cntl	$440
Viewsonic 17 17" 0.28DP 1280x1024NI Digi.Cntl	$975
Viewsonic 17G 17" Green W/On-Screen Cntrl	$875
Viewsonic 20 20" 0.28DP 1600x1280NI Digi.Cntl	$1570
Viewsonic 21 21" 0.26DP 1600x1280NI Digi.Cntl	$1820
Nanao F340iW 15" 0.28DP 1024x768NI	$640
Nanao F550iW 17" 0.28DP 1280x1024NI	$1100
Nanao F560iW 17" 0.26DP 1280x1024NI	$1320
NEC 3FGe 15" 0.28DP 1024x768NI	$580
NEC 4FGe 15" 0.28DP 1024x768NI 76Hz	$630
NEC 5FGe 17" 0.28DP 1024x768NI	$1000
NEC 5FGP 17" 0.28DP 1280x1024 OptiClear	$1130
NEC 6FGP 21" 0.28DP 1280x1024NI OptiClear	$1995

Modem:

14.4K Fax/Data Internal 16550UART	$115
US Robotics Sportster 14.4K Data/Fax 16550UART V32.bis, V.32, V.42 Internal/External	$145/165
Intel Fax Modem 14.4K Data/Fax 16550UART w/ Winfax Lite, Internal/External	$145/165
Intel SatisFaxtion 400 14.4K Data/Fax, internal, 80186 co-processor, line-sharing	$270

Floppy Drive/Tape Backup:

Teac 1.2M 5.25"/1.44M 3.5"/2.88M 3.5"	$46/38/90
Teac Dual 1.44M & 1.2M	$115
Toshiba 2.88M 3.5"	$58
Conner 250MB TapeBackup Int. w/ DC2120	$155
Colorado 250MB TapeBackup Internal	$165
3M Tape Cartridge DC2120 for 250MB QIC-80	$16
Conner SoftStor Anaconda 1.3GB 2750 SCSI-2 1/4" DAT Backup 36MB/Min Internal	$805
Conner SoftStor Anaconda 2.0GB 2800 SCSI-2 1/4" DAT Backup 36MB/Min Internal	$1005

KeyBoard/Mice/Software/Chassis/PS/Misc:

101 Enhanced Keyboard	$20
KeyTronic 101 Enhanced U.S. Made	$30
Focus 2001 101 Enhanced Click w/Cover	$36
Focus 8000 111 with Calculator	$40
Focus 9000 129 Programmable w/Calculator	$60
NorthGate OmniKey 101/102	$75
MS Compatible 3-Button Mouse	$10
Logitech Serial First Mouse/Mouseman	$25/35
Logitech Trackman	$75
Logitech Mouseman Cordless	$80
MicroSoft Ergonomic Serial Mouse V2.0	**$35**
MS DOS 6.2/Windows V3.11	$40/50
Standard Mini Tower with 200W PS	$55
Premium Case w/230W Mini/Desktop/Med	$70/75/95
Premium Case w/250W Full Size Tower	$115
Power Supply PS-II Type 230W UL / 300W UL	$42/85
486/P5 Pentium CPU Cooling Fan	$10/20
Chassis Second Cooling Fan 3" or 3.5"	$20
Printer Cable 6"/10"/15"	$5/7/9
Motherboard External Battery	$5
Motherboard Crystal for 25/33/40/50/66MHz	$5

CD-ROM Drive:

Plextor CD-3028 SCSI-2 240ms, 330KB/Sec, Double-Spd Multi-Session Photo CD. internal	**$268**
Toshiba XM-3401B SCSI 256K Cache,200ms 330KB/Sec, Multi-Spin/Spd Internal	$310
NEC Triple Spd MultiSpin 3Xi Internal Orginal	$470
NEC Triple Spd MultiSpin 3Xi Int. OEM (No Disply)	$370
Mitsumi DblSpeed 250ms 300kb/s w/controller	$170
Panasonic CR-562 320ms - need no caddy	**$155**
AT Interface CD-ROM Controller with Sftwre	$25
120W Speaker w/ 4" Woofer + 2" Dome Tweeter	$95
TopTek 80W Amplified Stereo Speaker	$75
Media 690 Hi-Fi Amplified Stereo Speaker	$45
LabTec CS-550 Amplified Stereo Speaker	$35
CD-ROM Caddy	$6
Audio Cable - CD-ROM to Sound Card	$7

Sound Card:

ProAudio Spectrum 16 w/ SCSI Interface	$115
ProAudio Studio 16 w/ SCSI Interface	$139
Sound Blaster Deluxe 8 Bit	$50
Sound Blaster Pro Deluxe 8 Bit	$80
Sound Blaster 16 Basic	$99
Sound Blaster 16 SCSI /with ASP	$165/195
Sound Blaster 16 MultiCD /with ASP	$135/175

MultiMedia Package:

Creative Labs Discovery CD 8 Upgrade Kit	$295
Creative Labs Discovery CD 16 Upgrade Kit	$350
Creative Labs Edutainment CD 16 Upgrade Kit	$390

HardDisk

Western Digital	
340MB IDE WDAC2340	$265
420MB IDE WDAC2420	$310
540MB IDE WDAC2540	$425
Maxtor	
345MB IDE 7345AT 64K 14MS	$269
548MB IDE MXT7546A 256K 13MS New!	$435
345MB SCSI 7345S 64K 14MS	$335
540MB SCSI MXT540S 256K 8MS	$565
Quantum	
270MB IDE LPS270A 128K 12ms	$220
340MB IDE LPS340A 128K 14ms	$259
540MB IDE LPS540A 128K 14ms	$430
340MB SCSI-2 LPS340S 128K 14ms	$295
540MB SCSI-2 LPS540S 128K 12ms	$495
1.05GB SCSI-2 ProDrive PD1050S 512K 10ms	$865
1.2GB SCSI-2 ProDrive PD1225S 512K 10ms	$935
1.8GB SCSI-2 ProDrive PD1800S 512K 10ms	**$1095**
1.08GB Fast Wide SCSI-3 Empire Series 1080S 512K 9.5ms 3.5"	**$765**
Hewlett Packard	
1.05MB SCSI-2 HPC2247 10.5ms	$805
2.1GB FAST SCSI-2 HPC2490 8.9ms	$1605
2.47GB FAST SCSI-2 HPC3010 11.5ms	$1705

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Multimedia CD Titles

No.	Description	Price
004	MS BOOKSHELF	$29
005	SLEEPING BEAUTY	$16
006	COMPTON'S ENCYCLOPEDIA (MPC)	$24
008	DICTIONARY OF LIVING WORLD	$22
009	ARTHUR'S TEACHER TROUBLE	$19
010	BARNEY BEAR GOES TO SPACE	$14
012	MACMILLAN DICTIONARY CHIDREN	$19
013	MIXED UP MOTHER GOOSE	$13
014	CARMEN SAN DIEGO - DELUXE	$19
015	JONES IN THE FAST LANE	$14
016	PLAYING W/ LANGUAGES - ENGLISH	$18
018	MARIO'S MISSING/ WORLD ATLAS	$17
019	MAYO CLINIC FAMILY HEALTH BK	$20
020	NATIONAL GEOGRAPHIC MAMMALS	$19
021	REFERENCE LIBRARY BY STW	$15
022	CHESSMASTER 3000 MPC	$15
023	KINGS QUEST V	$12
024	SPACE QUEST IV	$15
025	STELLAR SEVEN	$15
026	ALL BEAUTIES****	$22
028	GIRLS OF VIVID VOL. 1.0****	$36
029	GIRLS OF VIVID VOL. 2.0****	$36
032	ADVENTURE OF WILLY BEAMISH	$15
033	AIRCRAFT ENCYCLOPEDIA	$28
034	AMER BUSINESS PHONEBOOK 1993	$15
035	AMERICAN VISTA	$27
036	ANIMALS ENCYCLOPEDIA MPC	$18
037	ARCADE BATTLES	$15
038	ARIS JETS & PROPS 2 DISKS	$17
039	ARIS WILD PLACES	$13
040	ARIS WIZARD TEST AND TUNE UP	$15
041	ARIS WORLD VIEW	$13
042	AUDUBON BIRDS	$15
043	AUDUBON MAMMALS	$17
044	BARNEY BEAR GOES TO SCHOOL	$16
045	BARRON'S COLLEGE GUIDE	$17
048	BRAIN DRAIN	$15
049	BUS. & ECON. WORLD ATLAS	$18
050	BUSINESS BACKGROUND	$19
051	BUSINESS MASTER	$19
052	CALIFORNIA COLLECTION	$15
053	CAREER OPPORTUNITIES	$29
054	CHESS MANIA	$39
055	CICA WINDOWS	$15
057	CLIP ART HEAVEN	$14
058	CLIPART GOLIATH	$13
060	COMPLETE BOOK SHOP	$15
062	CONSUMER INFORMATION	$28
065	CROSSWORD CRACKER	$22
066	DESERT STORM	$17
068	EDUCATION MASTER	$19
069	ELECTRONIC LIB OF ART VI	$25
072	EUROPEAN RACER BY REVELL	$55
073	FAMILY CHOICE	$19
075	FAMILY DOCTOR MPC	$19
076	FAMILY EDUCATION COLLECTION	$19
077	FONT MASTER I	$19
078	FONT MASTER II	$19
079	FUTURA GAMES	$16
080	GAME MASTER	$19
081	GAME PAK III (CHALLENGE PAK)	$23
082	GAME PAK II	$30
084	GREAT CITIES VOL. 1.0 & VOL.2.0	$17
086	GUINESS DISC MPC 1993	$19
088	INDIANA JONES FATE ATLANTIS	$25
089	KGB WORLD FACT BOOK	$31
091	KODAK PHOTO ACCESS	$15
092	LET'S PLAY	$17
094	LOOM	$15
095	LOVELY LADIES****	$33
097	MANHOLE	$34
098	MANTIS EXPERIMENTAL FIGHTER	$14
099	MAVIS BEACON TYPING 2.0 MPC	$15
101	MIRROR MIRROR	$19
102	MONKEY ISLAND - ENGLISH	$16
104	NATIONAL PARKS	$19
108	OLDIES BUT GOODIES	$18
109	OS/2 ARCHIVES	$15
110	OUR SOLAR SYSTEM	$14
111	PACIFIC ISLAND	$35
112	PC MEDIC	$27
115	PETER AND THE WOLF	$17
116	PHOENIX 3.0 SHAREWARE	$18
117	PLAYING W/ LANG/FRENCH	$19
118	PLAYING W/ LANG/GERMAN	$19
119	PLAYING W/ LANG /JAPANESE	$19
120	PLAYING W/ LANG/SPANISH	$19
121	PRO PHONE 1993	$99
122	PROGRAMMER'S ROM	$27
125	SAN DIEGO ZOO/ANIMALS	$18
126	SECRET WEAPON OF LUFTWAFFE	$14
127	THE SEVENTH GUEST - VIRGIN	$32
129	SHAKESPEARE	$13
138	SIMTEL MSDOS SHAREWARE	$15
139	SO MUCH SCREENWARE	$24
142	SPEEDWAY	$59
143	STORYTIME	$21
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Continued from page 86

of the message, as if it were a paper memorandum. This is a waste of space and a duplication of effort, since the form of electronic mail is modeled on memoranda anyway, and all the important headers, such as From:, To:, Cc:, Date:, and Subject:, are in the headers of the message. Find a way to turn off memorandum headers inside the message body or find a new mail program.

Some commercial conferencing systems don't have Cc: headers, and require you to send a separate message to each person you want to reach. This increases their revenue, since they charge per message, but decreases the utility of electronic mail, since it discourages carbon copies because of expense and makes mail conversations more difficult. You might want to find a different mail program for that system, or find a different conferencing system.

Other people quote all the headers of a message when quoting the text of the message. The From: line would be quite enough in most cases. You do not need to quote Received: lines unless you are asking for help debugging a bounce message. You may say you don't have time to delete them. The reader may not have time to read them. Maybe you should get a mail program that will delete them for you.

2) Forwarding personal mail without permission

Most mail systems make forwarding a mail message very easy. Some mail users will forward any message they get to anyone they please whenever they feel like it. The rationale some use is that business mail is not private unless the writer explicitly says so. Somehow it's hard to believe the writer saying so would make any difference.... If a message is addressed only to you, the best rule of thumb is not to forward it to anybody else unless it was clearly part of an ongoing conversation in a mailing list or newsgroup (subjects of later columns), or you ask permission of the original writer first. On the other hand, don't send any mail you wouldn't mind seeing on the evening news: it's happened.

Related to this, is the person who decides to keep sending messages to your personal mailbox even after you have expressed disinterest. Because it's possible doesn't mean it's polite or right.

1) New subject at the end of the message

Blah blah blah, blah blah, and on another topic we've just been assigned a new project....

Unlike paper mail, electronic mail does not require you to print, envelope, stamp, and mail a new piece of paper for each message. It really isn't difficult to send a new message for a new subject. You can even put a new Subject: header at the top, so that the reader can see what you're writing about, and can file the message in an appropriate folder.

This top ten list may not be as funny as some you'll see on late night television. Experienced electronic mail users will probably get a chuckle out of some of them, though. We hope they will help you communicate more effectively online. ■

John S. Quarterman is secretary of MIDS and editor of Matrix News, *the monthly newsletter of MIDS, which looks at the contextual issues crossing network, geographic, and political boundaries. Quarterman is senior technical partner of Texas Internet Consulting (TIC), which consults in networks and open systems, with particular emphasis on TCP/IP networks, UNIX systems, and standards. He is the author of* The Matrix: Computer Networks and Conferencing Systems Worldwide, *Digital Press, 1990; and coauthor of* The Design and Implementation of the 4.3BSD UNIX Operating System, *1989; and* UNIX, POSIX, and Open Systems: The Open Standards Puzzle, *1993, Addison-Wesley.*

Smoot Carl-Mitchell is the managing partner in TIC, and is President of MIDS. He was the principal author of Practical Internetworking With TCP/IP and UNIX, *1993, and is coauthor of* The Internet Connection: System Connectivity and Configuration, *1994; both coauthored with Quarterman, from Addison-Wesley.*

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sounds and includes a proprietary interface for Panasonic CD-ROM drives. (Sound Blaster 16MCD contains three CD-ROM interfaces to support Panasonic, Mitsumi, or Sony drives.)

•Sound Blaster 16SCSI—same card as the Sound Blaster 16, but with an incorporated Adaptec 1520 SCSI host adaptor. (The host adaptor has no boot ROM—attached SCSI hard drives can't boot the system.)

The Sound Blaster 16 packages include Grolier's Multimedia Encyclopedia on CD-ROM, PC-Animate & HSC InterActive Authoring software. All of the Sound Blaster models include a variety of sound editing utilities for DOS and Windows, and are sold with and without accompanying CD-ROM drives. (The 16SCSI can be purchased in a kit that includes an NEC triple-speed drive, Aldus Photostyler, and tons of other CD-ROM software.)

Note, the retail prices quoted for all of the products listed in this review are those provided by the manufacturers. Street prices on some items (particularly the Toshiba CD-ROM drive) will be considerably less. ■

How to Manage Microsoft's CD-ROM EXTENSIONS

AN MS-DOS SYSTEM RUNNING DISK COMPRESSION SOFTware, SCSI device drivers, a fax modem, and other TSR-utilities may suffer a significant drop in available memory after loading the Microsoft CD-ROM extensions bundled with MS-DOS 6/6.2. Some SCSI drivers permit themselves to be loaded above 640K, but often there is no room in upper memory for CD-ROM drivers after the rest of Config.sys and Autoexec.bat has been loaded.

Dynamic Memory Control is a shareware utility that allows you to two-platoon your CD-ROM drivers. DMC leaves a small placeholder in either conventional or upper memory. It can load DOS block device drivers from batch files or at the command line. If you want to reclaim more memory you can temporarily unload the CD-ROM extensions, and reload them when you want to access the CD-ROM drive. The following is a sample batch file that uses Dynamic Memory Control's NOTE and LDEVICE utilities to toggle SCSI and CD-ROM drivers for the Toshiba X3401 drive and Future Domain host adaptor in and out of memory.

```
LOADCDR.BAT
loadhigh note
loadhigh ldevice c:\mdscd_fd. sys/D:MSCD001 /N:1
note
loadhigh c:\dos\MSCDEX /D:MSCD001
```

The DMC FREENOTE utility removes both the SCSI and CD-ROM drivers from upper memory, freeing up approximately 45K. (Note, the Future Domain SCSI driver can be loaded and removed from upper memory as many times as you like without causing operating system conflicts. Not all SCSI drivers will permit this. If the MS-DOS 6 "Loadhigh" statements are omitted, then this batch file can be used to load and unload the drivers in conventional memory.)

To regain access to the CD-ROM after running FREENOTE, run LOADCDR.BAT again.

—Lenny Bailes

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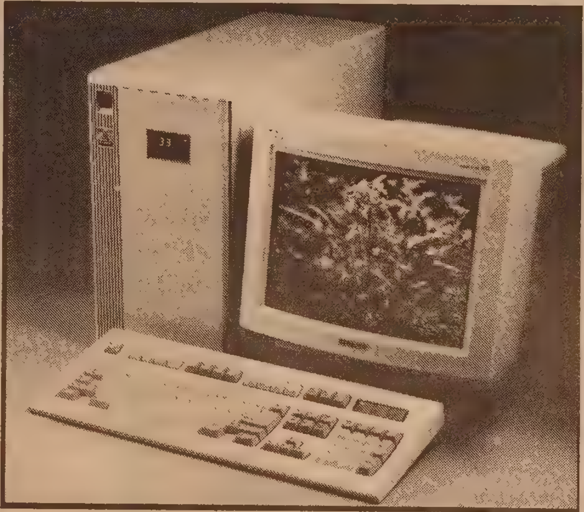

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"Here's a little tip for new parents. Disable the interrupt and reset keys because the kids love the heavy-duty chime. If it switches and you're working, you're screwed. But I really can't get mad at him when he gets me." [*Tom is very patient and must save his work every few seconds.—DM*]

IT'S NOT VITAMIN B-29

BMUG

With what's becoming a monthly ritual, the Mac community was plagued by yet another viral addition. Last February it was a virus from Italy, and this April it's a variant of the INIT 29 virus which first made its appearance in late 1988. Unfortunately for us in *MicroTimes* territory, the new strain of the bug was discovered in California.

INIT-29-B has the possibility of spreading quickly and far afield. The virus can infect almost every kind of file, including data files. Of course, infected documents can't spread a virus, but it may corrupt your data.

INIT-29-B is a pretty good virus—which is bad for users. It attacks both applications and system files, and radiates from those files. The "great" thing about this virus is that applications on an infected computer may become infected even if they're not launched. INIT-29-B is not picky.

This virus is unfortunately smart and tricky. If you stick a locked floppy in the disk drive, the infected Mac will display an alert dialog box: *The disk "xxxxx" needs minor repairs. Do you want to repair it?* The "repair job" has to be done on the unlocked and suddenly writable and infectable disk. The virus can really do a job on us unsuspecting and gullible users who believe every system message coming down the monitor.

The original INIT-29 virus caused some printing problems and unexpected crashes. As you might imagine when a piece of software stirs up the code of your applications and files, some may fail to run properly.

Please don't let this happen to you or your beloved files! The correct version of Disinfectant, the freeware anti-virus software, is available for members to download on Planet BMUG, our online service. It is available on the Utilities V1 floppy disk from the BMUG office for $4 plus handling.

SHAREWARE SPOTLIGHT

In keeping with this month's little child theme, I point you to KeyWack v1.2 by Paul Duffy of E&P Ware.

It's a freeware "game" application for babies who like to sit at their parent's Mac and bang the keyboard. KeyWack draws shapes and plays random sounds as the keys are wacked. It looks much like KidPix, but without the drawing tools.

It also prevents babies from accidentally opening most programs or documents, which can be a problem—especially if the little darling isn't yours...■

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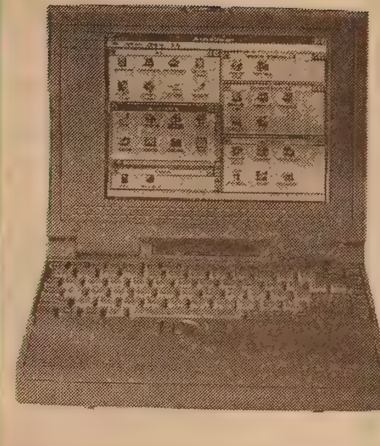

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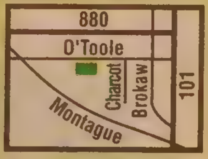

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BMUG is an educational, nonprofit, consumer advocacy group organized to share information and provide critical direction to users and developers in the computer community worldwide. It is an independent advocate, not affiliated with any manufacturer, delivering trustworthy information and useful products.

Like any growing organization, it is many different things to its fifteen thousand international members. BMUG supports many special interest groups (SIGs), 18-line Planet BMUG and 11-line BMUG Boston BBSes, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 500+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6:30 to 9:30 (or whenever we finish), on the UCB campus. BMUG West and BMUG South are monthly meetings held in San Francisco and San Jose. Check the Announcement Line at (510)549-2684 ext. 8.

The BMUG Office, 2055 Center Street (a half block from the BART station), is open to the public 8:30 am to 4:30 pm. Please come by, say hello, and meet other members.

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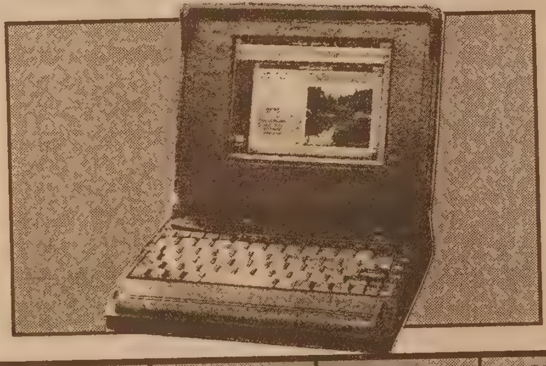

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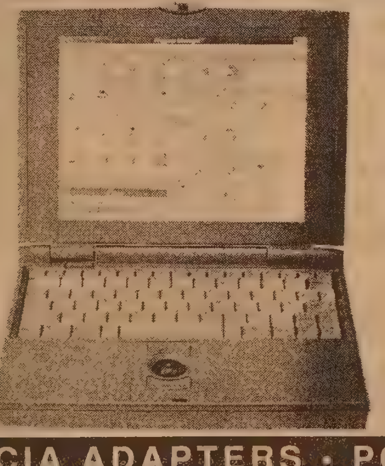

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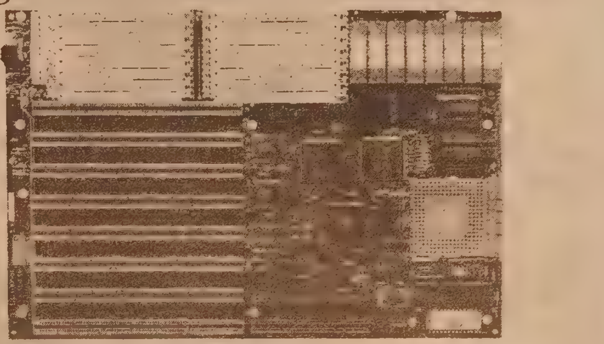

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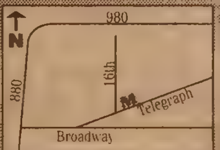

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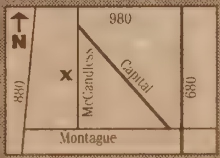

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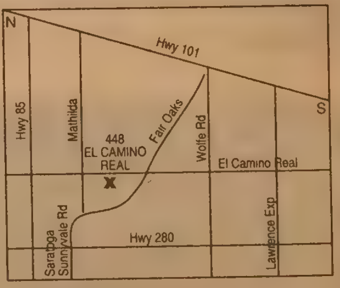

MULTIMEDIA 101

The State Of The Art, The Wrath Of The Gods

BY JONATHAN E.

Multimedia is an astoundingly broad term, encompassing a huge variety of applications, many of which are yet to be successfully implemented.

Concentrating only on its publishing aspects and leaving aside discussion of software and hardware tools, it can mean something relatively simple at the lower end—reference works or browsers with text; still graphics; and some degree of interactivity in the forms of hypertext, searching capabilities, and direct indexing. This type of multimedia is really nothing more than an electronic book, and, while marketing considerations dictate that it be called multimedia, the major difference between it and a book printed on paper is simply that it comes on a CD-ROM or, if the content is small enough, on a floppy disk.

Inching up from that simple state are titles that add sound and moving graphics, either as video or animations. Of course, you cannot include sound or video on a printed page, so this does represent a genuine leap in capabilities. However, in many cases the content might be as effectively communicated with a combo package of book and CD or videocassette, or even video alone.

One advantage of the computer-based medium is that the manufacturing cost of a CD-ROM is much lower than the printing cost of a substantial book. Associated with this is the ability to include much more material. Another, and perhaps more significant, advantage is that the linking of text to sound or video can be much tighter than if the content is spread between two media sources.

On the other hand, the market for books, CDs, and videotapes is currently much larger than that for computer-based media. When the sound is designed to be triggered by user action, i.e. clicking a remote control in response to a text cue, it is possible to achieve a fairly precise linkage between text and sound with random-access storage, such as CD, as opposed to linear-access storage, such as video tape. Thus, if one were presenting a guide to

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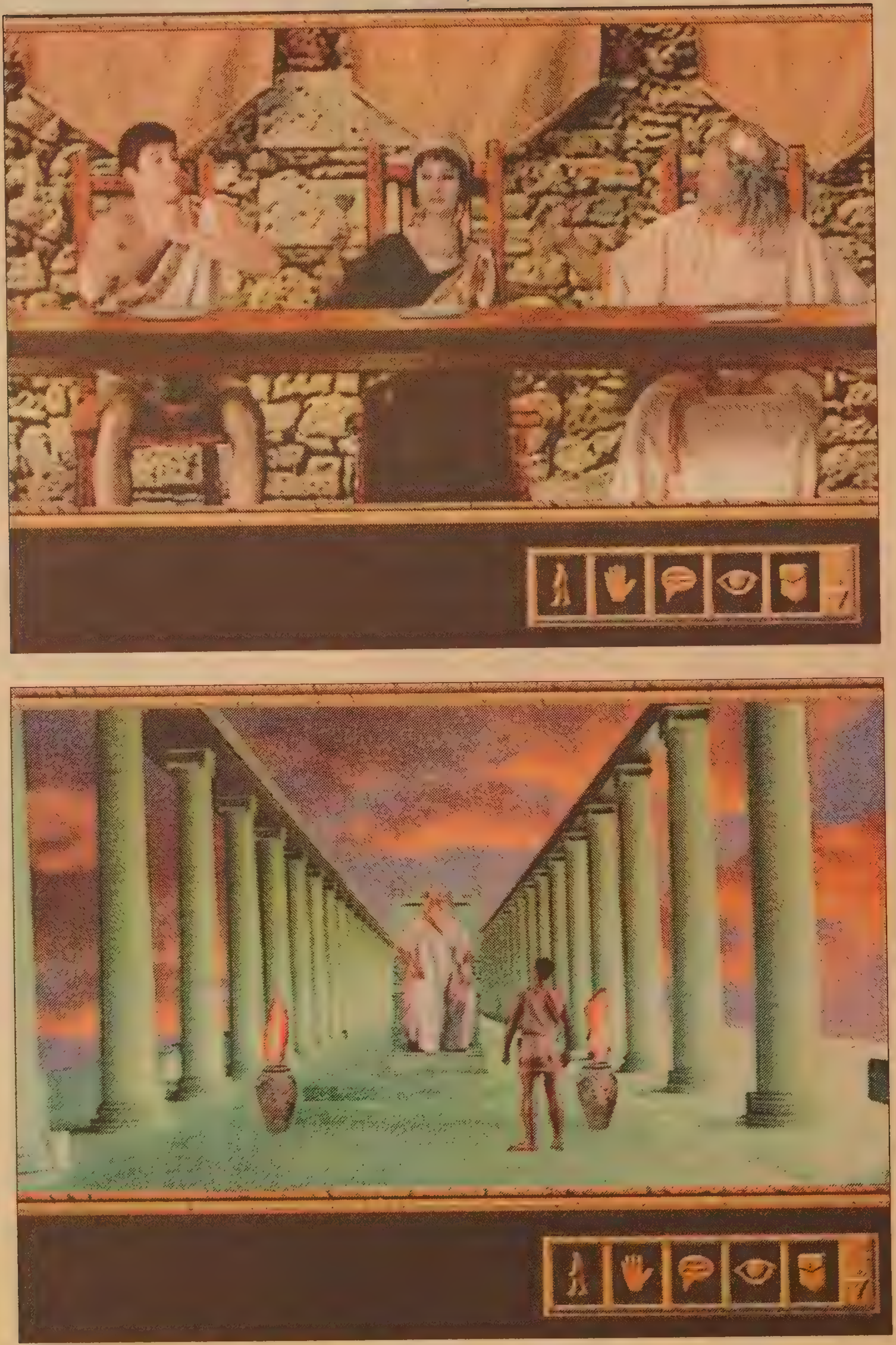
Jonathan E. has worked with desktop multimedia since 1988. He also writes about world music and the Archaic Revival for BAM. *His USPS mailing address is c/o SoundSwell, 54 29th St., Richmond, CA 94804. His email address is jeve@well.sf.ca.us*

Scenes from Wrath of the Gods



music for example, a book-CD package might well make more economic sense and may do the material more justice.

A couple of examples are the book-CD sets of *Voices of Forgotten Worlds—Traditional Music of Indigenous People* from Ellipsis Arts—although the book part of this is on the slim side, there's more music on the two CDs than you could fit on a CD-ROM—and *Zouk: World Music in the West Indies* by Jocelyne Guilbault from The University of Chicago Press.

These first two types are pretty pedestrian aspects of multimedia but are well represented in the marketplace. Many titles are shovelware (pre-existing material reused at relatively low cost), and undoubtedly we will continue to see many examples. As Fabrice Florin pointed out in last month's Multimedia 101 column, and as anyone who has clicked and clicked on buttons to get to the next screen or launch sounds or videos knows from firsthand experience, the basic problem is that this approach produces results that are not very compelling.

Good content and design can overcome this deficit to a certain extent. An example of a title that works in this type of multimedia is the CD-ROM version of Marvin Minsky's *The Society of Mind* from Voyager, which expands upon the original printed text in a relatively simple fashion with video and cross-referencing, but is done elegantly and thoughtfully enough to produce an engaging experience.

In addition to these two types are many others. There are games, which use plenty of advanced multimedia techniques, but in many cases are emotionally flat, relying on the visceral thrill of the twitch and vanquishing evil opponents with a blast. There are a few interactive music products ranging from educational to mix-it-for-yourself musical building blocks. There are various film- and art-based titles. There are some plain fun but rather silly, almost comic-book items, such as Rodney's Wonder Window by Rodney Alan Greenblatt from Voyager.

Of course, there are tons of titles for children, usually involving cute animated animals, contemporary nursery rhymes, and something educational such as a foreign language or spelling. Video-mixing game play seems likely to become a fairly common type of product. However, even though they may tax computing power and programming skills, all these forms of multimedia are conceptually fairly simple and straightforward.

THE NEW SENSATION AND EXPERIENCE OF MULTIMEDIA

The current state of multimedia is often compared to the state of film before D. W. Griffith, but I think a more accurate depiction might be that it's like music before synthesizers—there's a lot of it around, it's very varied, there's imagination galore amongst its practitioners, but it's shackled to a sort of earthbound lack of flexibility, the texture is not sufficiently malleable.

There's a school of thought that believes that real art is independent of technology and techniques, that if you have something to say you'll say it regardless of the materials you have at hand, but I am not of that school. In painting alone, for example, the introduction of both portable oil paints and watercolors led to new forms of expression. Subsequent advances in appropriate technologies—sound recording, photography, screen printing—have all led to new art forms. I cannot believe that all the newfound artists in those media would have found the means to express themselves through only prior technologies.

Likewise, visionaries project a potential whole new means of artistic expression, where computer-based multimedia will

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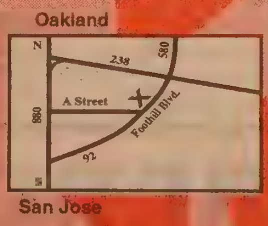

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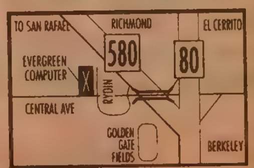

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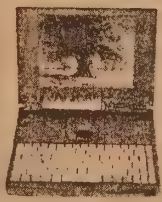

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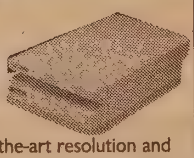

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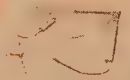

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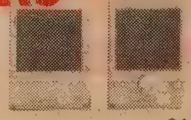

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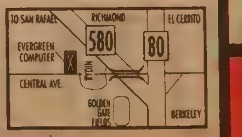

produce new sensations and experiences far beyond what traditional media can produce. Much of the thinking here is based upon an expansion of the effects of traditional literary and cinematic media. Take the emotional grip or intellectual intrigue of a good book or movie, add the ingredients that only computer-based media can provide—interactivity, a selection of randomly generated content, game playing and score keeping—and perhaps a new sort of experience will emerge. It's as though we were in the time before the outer planets were discovered. Calculations indicate that there must be something out there, but we haven't actually seen what it is yet.

Products like Myst and Xplora 1 are edging toward this unknown territory. Wacky Jacks and Travelrama USA aim for the same place in a different way. I find all these titles successful because they do manage to produce an experience, primitive as it may be, that video, books, or sound alone cannot produce. The principal element of that experience is involvement. That involvement is the result of at least minimal storytelling in the framing of the experience.

It's nothing new for computers to involve people, as any programmer or online addict can testify; what's desired here is an artistically induced involvement that has appeal to those who don't expect to find it through a computer.

SOME DIFFICULTIES, SOME SOLUTIONS

This is no easy task. Nonlinear and interactive storytelling poses some fundamental problems, as a look at the "Passivity & Interactivity," "Is Interactive Literature an Oxymoron," "Emotion and Entertainment," and "Interactivity vs. Creativity" topics in the WELL's Muchomedia conference will quickly show.

Other difficulties are posed by the physical aspects of using a computer. A simple one is the issue of where the computer is likely to be in the home, as mentioned by Fabrice Florin. Obviously, this is something that will change with time as computers become more accepted as entertainment devices.

However, there remain larger issues. Consider the different experiences of watching a movie in a theater and watching it at home on tape. In the theater, with its large screen, continuous and high-definition (you hope) projection, compatible audience (you also hope), and sense of occasion, a good movie is considerably more intense. At home, with the smaller screen, the poor resolution, the phone ringing, the informality, the movie has to overcome many more obstacles to be a truly intense experience.

Likewise, a computer has a relatively small screen; resolution and palette mangement reduce the visual quality; a good multimedia product requires more than a single sitting to thoroughly and comfortably explore (as it should, considering its retail price); and there are interruptions due to the informality of computer use. None of these are insurmountable obstacles—after all a book faces the same general difficulties and there's no shortage of completely absorbing books.

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I have noticed some basic guidelines to successful multimedia products of this experiential type. The vital element is the creation of a world that the user feels part of. An important technique is to use the whole screen without distractions such as a menu bar. A corollary of this is that the user should be able to do everything without choosing different tools to do different things. Besides strong characters, attractive art, and good production values, some sort of game play or puzzle solving help to draw the user in. Essentially these techniques serve to suspend the disbelief of the user and keep him or her involved in the imaginary world.

For repeat use, randomly selected puzzles from a larger collection will keep the experience fresh. As always, there are exceptions to these guidelines, and what one person finds successful will be dull to another.

WRATH OF THE GODS

Wrath of the Gods is a large imaginary world based on ancient Greece and its myths. It does not follow several of the above guidelines, which makes it more work to derive an enthralling experience from it, yet eventually I became sufficiently involved to enjoy it.

The basic plot is that you are the abandoned offspring of a king; you must follow the hero's way to recover your kingdom and to free your subjects from the tribute demanded by King Minos of Crete, who uses them as victims for the Minotaur in the labyrinth of Crete. This was originally one of the stories about Theseus, but the whole Wrath adventure is actually a compilation of the legends of various Greek heroes, including Hercules, Jason, and Perseus, along with other tales of Theseus.

> It's nothing new for computers to involve people, as any programmer or online addict can testify; what's desired here is an artistically induced involvement that has appeal to those who don't expect to find it through a computer.

A quick glance at Wrath of the Gods is not very promising. The play area extends across the screen, but there is a large area at the bottom containing buttons for the five different modes of the game: walking, doing, listening, looking, and using your inventory of acquired objects. You can scroll down to another bank of buttons that allow you to consult the Oracle; read background information on the Greek myths; call up the map of the entire game; call up the setup menu to change volume, save or load games, or quit; and access the help system. Certainly not all these latter options could be accessible from the play area itself, but the constant clicking on the first bank of buttons to select walk, do, listen to what the characters have to say, or look at objects is tedious. Myst, with a similar choice of actions, manages to incorporate all these options into the play area. Wrath of the Gods does allow you to choose these actions from the keyboard, but that is only a small improvement.

The look of Wrath of the Gods is another hurdle to get over. The screens are photographic images, shot on location in Greece, and of reasonable quality. However, the problem comes from the way the characters' movements are handled. Basically a QuickTime window of the action is used against the still background. Sometimes this works quite well, but overall it produces a strange and very unlifelike jerky effect that takes a lot of getting used to.

The characters themselves are cartoonish, partially from the use of the above technique to describe motion, but more importantly because the acting is extremely unsubtle and there is a jokey anachronism prevalent in the writing of their lines. Female characters suffer from being portrayed either as stereotypical sex kittens or as withered old crones.

Strangely, however, after a couple of hours of using Wrath of the Gods, I found myself ignoring these drawbacks and engaged in the ancient Greek experience. A good part of this is due to the quality of the storyline—the archetypal power of the Greek myths reverberate into the cyberage. Wrath of the Gods background information on the myths is very good, and even on occasion pokes fun at its own anachronisms. It is also only fair to report that other people who have seen Wrath of the Gods found it a much more immediately engaging experience than I did. ■

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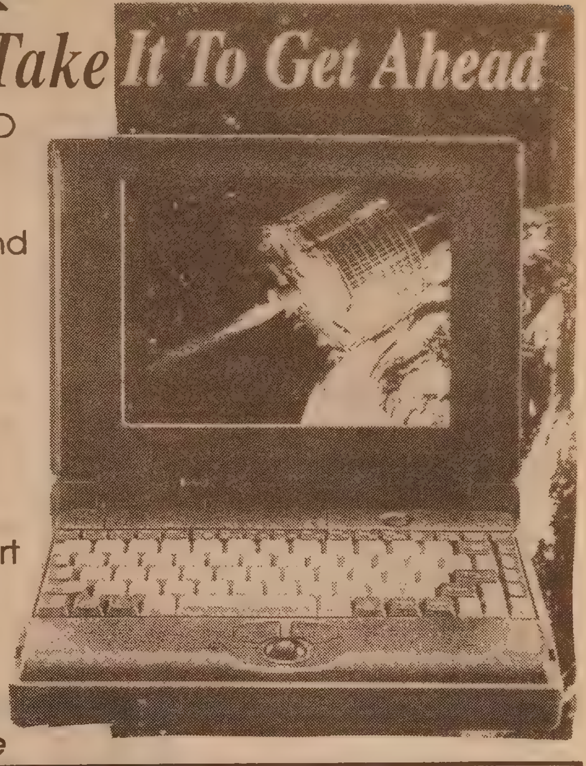

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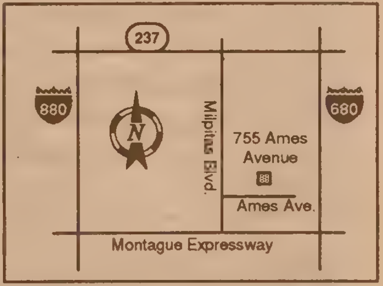

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Gulch Gossip

By Jonathan E.

The **Ziff-Davis** versus *Wired* saga continues. Ziff's new digital lifestyle publication, "*Wired* for dummies" as it was called by a member of the Wired camp in the last column, has snared **Linda Jacobson**, previously with *Wired*, as senior editor. This is Jacobson's first full-time day job in eight years so you can be sure she has a more positive view of the magazine. She explains that "it will cover things to do with your computer, ways to spend your time rather than your money." Jacobson is one of the most energetic people I know—she'll continue her work with **D'Cückoo**, the percussion-electronics techno-juju band, and **VeRGe**, the virtual reality group, as well as teach her course at San Francisco State.

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Ziff has also headhunted **Beth Cataldo** from *Electronic Entertainment* while **Sherry Husse**, noted dessert provider and previously with **Renga Software**, is the director of electronic publishing with responsibilities for the online and CD-ROM versions of the magazine. **Donna Myerson** is also reported to be on board with **John Dickinson** as editor-in-chief. The exec running the show is **Mike Edelhart** and the headhunting continues—as soon as I finish this column, I'm off to talk with him (maybe he just wants to give me a hard time about that "*Wired* for dummies" line!). The operation moves to a new location in San Francisco in June, and the name of the publication should also be public by then. Meanwhile, *Wired* is taking it on the chin for publishing inaccurate stories, including one on Ziff in its May issue.

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Beth Rogozinski, of **The New Downtown Center at San Francisco State**, gave me a tour of the Center's new Mac lab for the Multimedia program. It has fifteen Quadra 800s, each with 24 megs of RAM, a 230-meg hard disk, double-speed CD-ROM drive, and 17" color monitor. They're Ethernet connected with a 2-gig server. No small potatoes—and a persuasive factor in the ongoing debate over whether early learners do better to invest in their own system or in classes. Currently the Windows lab is being upgraded to all 486 machines equipped with SoundBlaster cards. The Center has also recently signed a deal with **Wadsworth Publishing** to recreate its multimedia courses on CD-ROM, with an initial series of three titles planned to include an Introduction to Multimedia, Instructional Design, and Authoring Systems—further complicating the debate over what's the best investment.

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SBD Productions, developers of Midnight Movie Madness, have signed with **Great Bear Technology** to produce a series of three comedy CD-ROMs. **Mark Howard** and **Eric Goldberg**, both formerly of *The National Lampoon*, write the jokes, while **Tim Glasser** writes the code. The first title is in quiz format, using sports bloopers for its video content. ... **Big Top Productions** is the new home of **Jim** and **Jake Myrick**, previously the creative minds at **Image Smith**. Big Top is going for the big splash with a kids-oriented, gender-inclusive CD-ROM based on the "Hello Kitty" character. This is the first time Kitty's character, which generated $893 million worldwide last year, has been licensed to an American company. The CD-ROM's title is The Learning Circus, it contains four edutainment games, and will be bundled with three thousand Mac Quadras and v4.0 of Macromedia's Director. (It will also be available at the usual retail outlets.) Next up on Big Fun's bill are plans for "Keroppi the Frog." A major publicity campaign is being organized by **Valdis Hellveik** of **Interactive Public Relations, Inc.**, a new company deep in the Gulch.

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Living Books, now a joint venture between **Brøderbund** and **Random House**, is set to make the move from Novato to a San Francisco location in June. ... **Steve Cherneff** has made the move from San Anselmo's **Amazing Media** to the Gulch's **Macromedia**, where he now manages the developer program. His job is to provide extra support to developers who are running into difficulties by finding both technical info and referring them to a network of experts. Macromedia has just released Director v4.0 for the Mac with beta-testing continuing on Director v4.0 for Windows. Cherneff explains that v4.0 is a major upgrade with an easier, cleaner interface and that it is optimized for CD-ROM playback. Macromedia sums it up as "Faster, easier, and a whole lot cooler!" The Windows version will be out late summer and will replace the present converter scheme, allowing full authoring in the Windows environment for the first time. Cherneff can be reached at (415)252-2111.

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Zakros InterArts recently unveiled the first of its **ChronicArt Gallery** showings. Curated by **Belén Garcia-Alvarado**, the idea is to introduce video artists to the digital arena through production assistance in the conversion process and display of the finished works. Zakros is also wrapping up work on the concept-sketch stage of what is rumored to be an exciting interactive TV project involving the visualization of music for **Paramount's Media Kitchen**. Details are still closely guarded. Contact Zakros at 614 York St., SF, CA 94110. ... **Survival Research Labs** are rumored to be working on a CD-ROM. Now tell me, would you really trust these guys, famous for their explosive and destructive devices, with your drive, your monitor?

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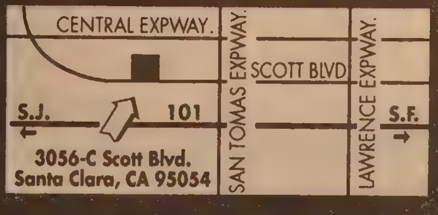

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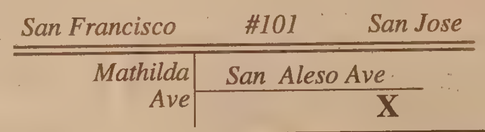

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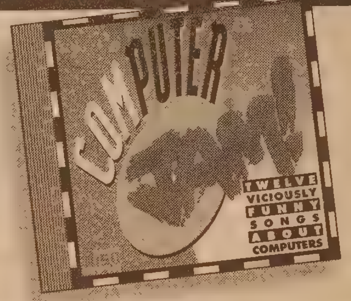

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Douglas Rushkoff has a new book out, *Cyberia*, published by HarperSanFrancisco. It's about the emerging culture that drifts around the arty, youthful end of the computer world. It's far from a perfect book—but is a fairly interesting read, although often quite infuriating or puzzling. True to the spirit of online culture, Rushkoff will take part in an innovative series of three discussions about his book on Omni Online through AOL. The first is titled "Cyberia & Consciousness" and takes place on May 9 with **Terence McKenna** and **Rudy Rucker**. "Cyberia & Culture" is the second with **R.U. Sirius** and **Pat Cattagan** on May 16. The third is "Cyberia & Music" and will be on May 23 with **Jas Morgan** and hopefully a big star who hadn't quite signed on the bottom line at press time. **Leslie Rossman** coordinated the series and can be reached at (415)931-3841 or through email at hileslie@aol.com . Rushkoff is also doing an old-fashioned book tour with personal appearances at the Booksmith on Haight Street, SF, on May 4; Printers Ink, Palo Alto on May 5; and Barnes & Noble, San Jose, May 6.

▼▼▼▼▼

On May 7, you can check a whole day of "Music & Multimedia" at the Castro Theater. Panels start at 9:30 am and run through 6:15 pm. There's a wide range of big names from the industry speaking, pontificating, and expounding on subjects from the basics of what multimedia means through the economics of the business to what the future may hold. At 8 pm there's a showcase of eleven music-based titles on the big screen, including titles from or about **The Who**, **John Lennon**, **Yes**, **Elvis Presley**, whatever **Prince** calls himself these days, and "Haight-Ashbury in the Sixties." Much more information can be had from (415)433-1772. ... Note also that **Joe's Diner** and **Dana Atchley's** *Next Exit* have an extended run on Fridays and Saturdays through May 14. More details from (415)824-9394 or email jello@well.sf.ca.us . ■

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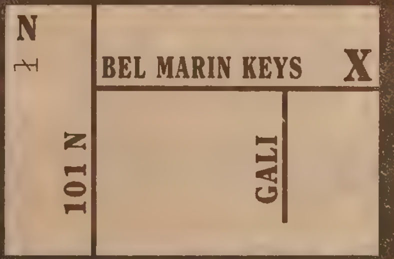

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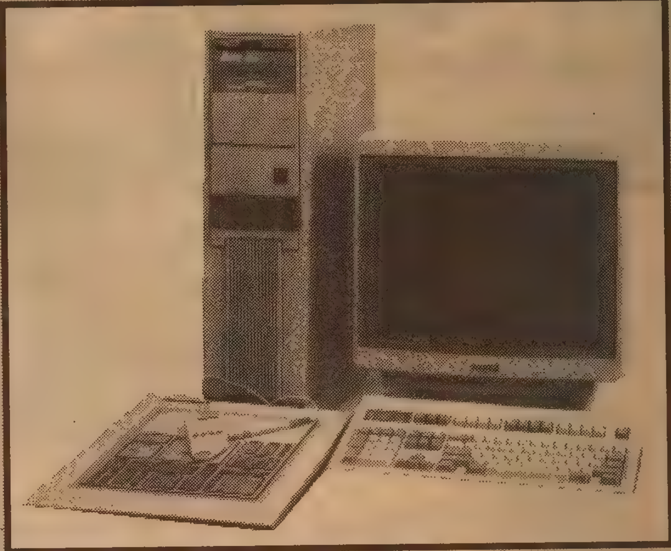

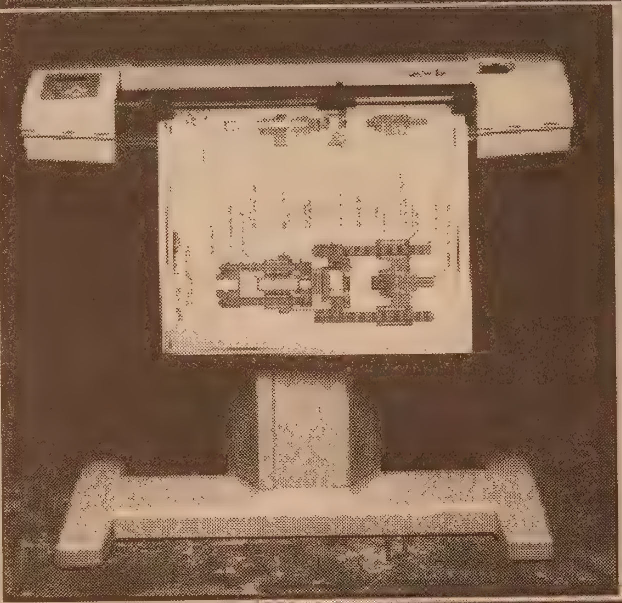

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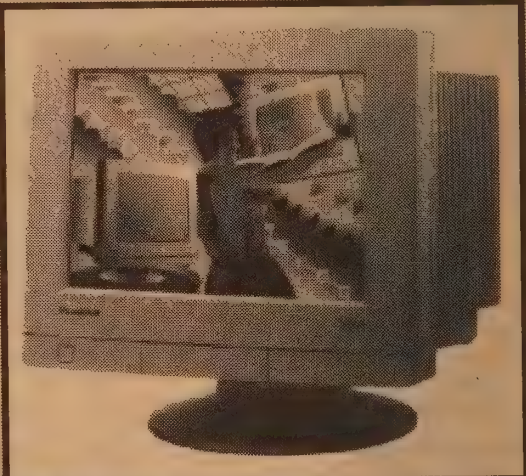

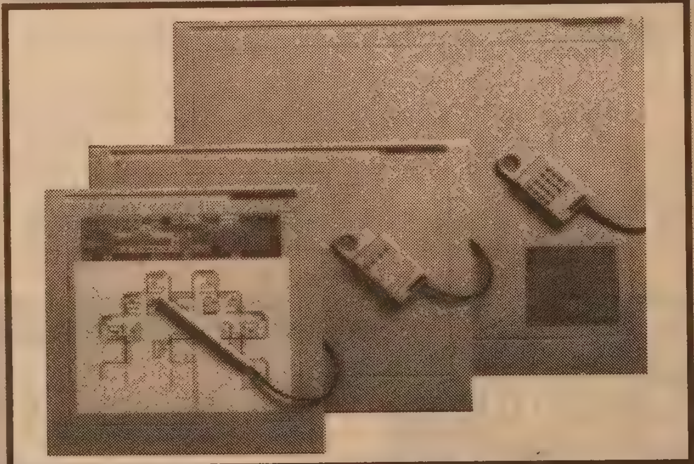

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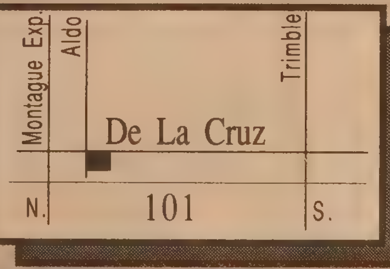

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CD-ROM: Amiga Style

BY DOUGLAS J. NAKAKIHARA

The personal computer world has gone CD-ROM crazy, a fact I hadn't realized until a recent visit to a local computer swap meet. There were numerous vendors with tables and tables of CD software. More importantly, there were swarms of eager buyers snatching up the disks.

Of course most of these titles were meant for IBM PC compatibles and a few for the Macintosh.

Fortunately, many of the titles will work fine on a CD-ROM-equipped Amiga, for reasons I'll explain later. Although PC- or Mac-executable programs will generally be useless on an Amiga, disks that contain mostly data files, like PostScript fonts, clipart, graphics, and audio clips can be very valuable to Amiga users. You'll have to use image processors or other utilities to convert them into a usable Amiga format, but that isn't very difficult. Additionally, there are a number of Amiga-specific CDs available.

There is tremendous competition among CD-ROM manufacturers and retailers, which can cause confusion for the potential buyer. The following information is intended to help clear things up and show you how easy it is to add a CD-ROM drive to an Amiga. In some instances, you may not even have to open your computer case.

INTERFACE

Generally, CD-ROM drives can be differentiated based on interface, transfer rate, access time, and features. SCSI is the interface of choice for the Amiga. If you already have a SCSI interface card, you're halfway there. If you don't, you'll have to purchase one.

For slot-bearing Amigas, there are numerous choices. Several manufacturers offer expansion cards that take advantage of the higher transfer rate of the Zorro III bus used in the A4000 and A3000. This is normally only an issue for the 4000, since the 3000 already has a fast built-in SCSI interface. Of course, a Zorro II board will work fine in a 4000, but the performance will be less than optimum.

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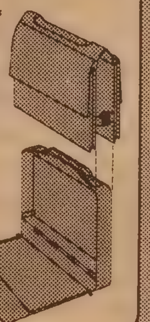
A. Super-brilliant LED -- this thing is blinding! An extra-jumbo (10mm dia.) water-clear lens houses a 20,000 Mcd Indium/Gallium/Aluminum/Phosphide chip that will leave you seeing spots when shined in your eye! Comes with spec. sheet. HSC#14698 $1.95

B. Ultrasonic Transducer Emitter/Receiver set -- the kind that are so handy for sonic ranging, intrusion or control projects. Identical .63" dia. housings have 40 KHz transducers made by Murata/Erie. Receiver is rated at -68dB min. sensitivity, transmitter is rated at 110dB min. sound level. Sold as a set. Spec. diagram included. HSC#14682 $3.90



C. Camera flash unit -- (not shown) consists of a 2" x 2" printed circuit board of irregular-shape that has a 1" long strobe tube with lens and reflectormounted on one side, and the flash circutry mounted on the other. Add 1.5 VDC (a single AA cell will do), and solder a momentary switch to the two pads on the board, and "flash" you're in business! HSC# 14702 $3.95

D. Laptop carrying case -- black leather-look vinyl zip case with moveable partitions is 13" x 13" x 2.5", a Toshiba T1000 fits perfectly with compartment for AC adaptor and flap for papers etc. in lid. "Saddle-bag" panniers clip over top, provide extra storage & cushioning. HSC#96315 $19.95

Give your Mac Vision!

With MacVision (and a video camera) your Macintosh will be able to see the outside world! Capture video stills from any composite video source (camera, VCR, video disk) and you can commit a B & W image to a disk file for editing with your paint program. New in the box unit with cables and power supply. Works with Mac II, SE or Plus, System 4.1+

HSC# 80150 $39.95

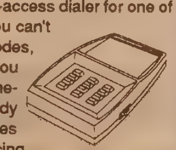
Mac Color Monitor

Genuine Apple Macintosh Performa 14" color monitor features:

- ⌘ .39 dot pitch
- ⌘ 640 x 480 picture resolution
- ⌘ 67 Hz vertical refresh rate (no flicker!)
- ⌘ Tilt/Swivel base
- ⌘ New in box with cables, instructions
- ⌘ 90-day warranty

HSC# 80149 $179.95

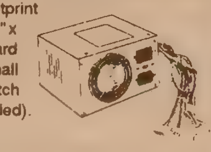
One-trick Phone Friend



This little novelty was meant as an easy-access dialer for one of the off-brand long distance services. You can't change the pre-programmed access codes, but it will remember the last number you dialed with it, so you could use it as a one-number (16-digits) memory re-dialer. Handy for those midnight overseas calls! Uses three button cells which might need replacing.

HSC# 14438 $4.95

Super Computer Deals...

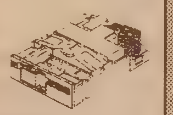


A. "Mini-tower" power supply, fits most Mini- and Mid-size tower cases as well as many small-footprint desk-top cases. 200W, measures 6" x 5.5" x 3.5", has normal motherboard connectors, three large and two small drive connectors and 22" long switch connection leads (switch not included). New! HSC# 14649 $27.50

B. "Mini-tower" power supply, same as above but 165W and 10" switch connection leads. New! HSC# 14632 $24.95

C. Everex 2400 Baud Modem PC Board -- (RS-232 external type) 3.25" x 6", no enclosure available, Hayes compatible, new, fully assembled PC Board, works great with ProComm, requires 8-12VDC power adaptor (we have one you can adapt for this). Data sheet & pinout incl. HSC# 14467 $8.95

D. Used, good condition 3.5" Half-height 720K Floppy disk drive, Teac FD-135HFN-411-U. Hurry, 720's are getting hard to find! 90-day warranty. HSC# 14668 $19.95



E. Used, good condition 5.25" Half-height 360K Floppy disk drive, Teac FD-55BV-11-U. Hurry, 360's are getting even harder to find! 90-day warranty. HSC# 14667 $14.95

F. Generic Mouse -- three-button mechanical mouse for 9-pin "D-sub" type serial interface. New OEM version (sorry, no book, software or fancy box), 100% Microsoft Compatible. HSC#14673 $4.95

It's More than a Game...It's History!

They should make more computer games like this one..."Their Finest Hour -- The Battle of Britain" by Lucasfilm Games. It is a historically accurate depiction of the air battles that convulsed England during the summer of 1940, and you can relive WW II history by flying a Supermarine Spitfire or a Junkers "Stuka" divebomber (or one of six other fighters or medium/heavy bombers). You get a realistic-looking cockpit instrument panel on your screen, and your chosen craft's performance is based on the actual abilities of the planes. One of the best things about this game (leave it to Lucasfilm to excel in this area!) is the book that accompanies it. It starts off with a 45 page history of the war up to this crucial turning point, and is interspersed throughout with period photographs, campaign maps, profiles and quotes of important personalities, and discussions of strategies. There are even diary entries from British and German fliers that give first-hand accounts of what aerial combat was like in those desperate days. All that is left to experience the realism of battle is to climb into your "cockpit", grab the joystick and follow the mission plan you have built. You can even turn on a "cockpit camera" to record your battle for later viewing. This game was one of the most popular flight simulation games going a couple of years ago, now you can fly along with the aces, and if you are good enough, change history! What a way to painlessly absorb a history lesson, by living it! IBM/DOS,EGA/VGA, AdLib compatible. HSC#14694 $9.95

Natural Drawing on your Computer!

Have you ever tried to draw something with your mouse in any paint or draw program? It is nearly impossible to sketch anything other than the simplest geometric shapes with the ordinary mouse. Trackballs are even worse. They are great pointing devices, but as artist's or designer's tools, forget it! That is where graphics tablets or sketchpads take over. Calma and Summagraphics, to name two of the larger players, have made their name in this area, and no CAD user is going to be without one of these precision tools. They also can cost several hundred dollars, which takes them out of the range of most hobbyists and "thumbnail sketch" artists. Now you can move up to this technology without becoming a starving artist! The "PenMate" by Mouse Systems has a 6" x 9" drawing surface (that can be used in either "tall" or "wide" orientation) with 1000 lpi resolution that uses a pen-type stylus for position input, and a pressure tip and finger button which emulate the mouse buttons. Included software installs "Windows for Pen Computing" (you must already have Microsoft Windows 3.1) so you can experiment with handwriting recognition, and PenMate utility software lets you access frequently used Windows commands with just a touch of your pen. Mouse Systems' PenMate is 100% compatible with Microsoft mouse and Summagraphics MM Series graphics tablet protocols. And you get all this for only $39.95? Wow, get sketching today! HSC #14672 $39.95

Hard Disk Full? Put the Squeeze on your Data with SuperStor!

There are thousands of ironic stories in Software City, this is only one of them... Before Microsoft came out with DOS 6.0, there were dozens of thriving software companies writing all sorts of useful DOS utilities, including several varieties of Data Compression utilities. One company, Addstor, had a pair of products called SuperStor 2.0 and SuperStor PRO, which were finished, functioning, mature products. Giant Microsoft released DOS 6.0 with a data compression utility included, and Addstor saw their market evaporate. They eventually went under. The irony? DOS 6.0 had problems in the data compression utility, which required the birth of DOS 6.2...at the same time, a lawsuit by another utility provider against Microsoft was upheld, which we hear means that DOS 6.2's data compression utility may not be included anymore! Where does that leave Addstor? Still defunct, we're afraid, and no longer offering support, but we bought the remaining stock of their SuperStor and SuperStor PRO packages, and offer them at these amazing prices!

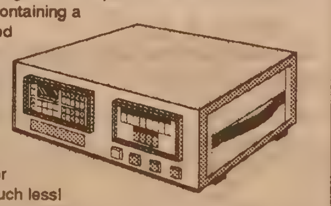
A. SuperStor 2.0 will increase your disk capacity, defragment files, and make better use of your disk space. Need DOS 3.2 or later, not compatible with Zenith or Tandy DOS. HSC# 14674 $6.95

B. SuperStor PRO includes Windows-based JPEG/MPEG compression/expansion utility for .JPG, .BMP, .TIF, .TGA and .PCX graphics files (huge benefits, 20:1 compression typical!), Windows utilities, increased compression and speed over SuperStor 2.0, password protection, Tune-up Analyzer, Integral Disk Cache, Compression Preview, automatic transparent data compression, more! HSC# 14675 $14.95

The Good Old Days...RF Parts Bargain!

Some younger enthusiasts may find this hard to believe; but hobbyists of yore actually used to get excited over finding circuit boards with interesting parts to unsolder! We're hoping there are still some people who appreciate this practice because we have some RF Network boards that have gobs of neat stuff...two Motorola MC145156P1 Synthesizer Chips, three Mini Circuits Labs SBL-1 Balanced Mixers, four VHF High-band Bandpass Filters, three SL560C 300MHz Lo-noise Pre-amp IC's, an FM Detector section built around an LM3089, a 3N211 FET, lots of Toko adjustable coils, etc. HSC# 14581 $4.95

Is Contol the Question?



Then the MicroMaster system by Minarik is the answer! Microprocessors are showing up everywhere, including industrial controller applications that used to consist of clock motors, gears, cams, time-delay relays and switches. With the MicroMaster, the front-panel programmable control unit can accommodate four inputs and outputs, and the expander unit adds eight more outputs. The devices we have for sale are used units consisting of a 17" x 17" x 6" case containing a controller and expander unit, two pneumatic switches (used as inputs), five internally mounted solenoid pneumatic valves, (outputs) and a 12 -15 VDC power supply for the valves. The WP6211 controller and WP6311 expander run on 110 VAC, so you could rip out the rest of the stuff and create your own configuration of relays, valves, or what have you that need to be controlled in a sequential and timed manner. A setup like this would usually sell for close to $700, but you can acquire one from HSC for much less!

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You may run into a little problem, however: some early A4000s (and all A3000s) have a problem with the Buster chip, which prevents taking full advantage of the Zorro III bus. The Buster chip needs to have a part number with a revision of greater than -09. If your Buster chip is socketed, a simple chip change will do the trick. Otherwise, a motherboard swap is required. Note: Some A4000 accelerator cards have a SCSI interface which bypasses the bus and avoids the Buster problem.

All of the Zorro III cards support the higher performance of the SCSI II standard. You'll have to check the specs of Zorro II boards to see if they do. If your interface supports SCSI II, make sure that the CD-ROM you purchase does as well—most of the newer drives do.

TRANSFER RATE

Originally, CD-ROMs only read data at a rate of 150kps (kilobytes per second). Since then, double-speed, triple-speed, and even quad-speed drives have doubled, tripled, and quadrupled this capability.

Single-speed SCSI drives have all but disappeared, and double-speed drives have become the de facto standard—as least for this week. The price of these drives has fallen to under $300, and I have seen some close-outs near $200! Triple-speed drives are around $500, and quad-speed drives cost about a grand. Obviously, double-speed drives present the most economical buy.

ACCESS TIME

Just like a hard drive, CD-ROMs also differ by access time, that is, the average time it takes the drive to access data. When comparing drives you should note this number when making your decision. However, remember too that this is an average, and minor differences between product specifications may not be significant in real-world operation.

FEATURES

All CD-ROMs share the same basic features; however, there are some features you should investigate, namely XA support and multisession capability. You'll see terms like "XA-ready," "XA-compliant," and even "XA-ready compliant." Suffice it to say that these describe a drive's ability to deliver audio and graphics simultaneously to a particular standard. For all practical purposes, it means the drive can read Kodak PhotoCDs. However, XA is also needed for the upcoming VideoCDs.

PhotoCDs are created using everyday photographic film, as an alternative to standard prints. So far there are very few places in my area where you can have this done. Multisession capability involves special writable CDs that can be reprocessed with additional PhotoCD images. Kodak made some special PhotoCD players, but the format has become much more popular on desktop computers. PhotoCD pro-

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- 1.44" Teac Floppy Drive
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- MiniTower Case, 1p2s1g I/O , Clock/ Calendar
- 101 EnchancedKeyboard, 3 Button Mouse w/Pad

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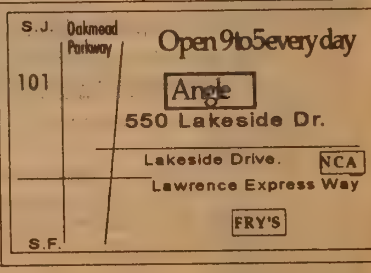

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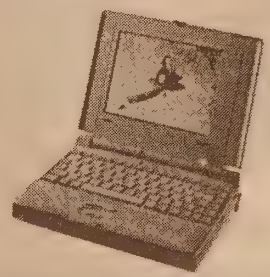

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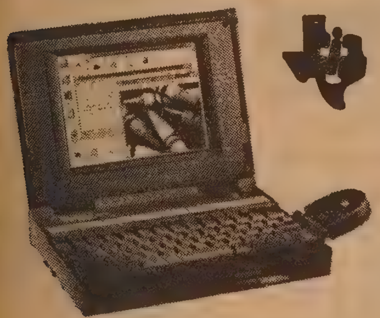

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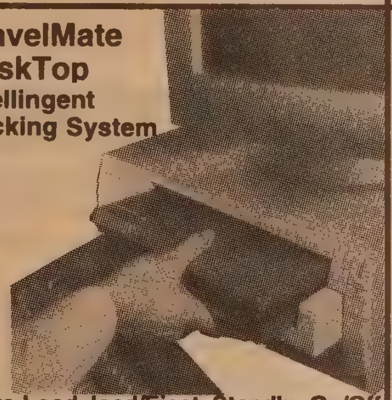

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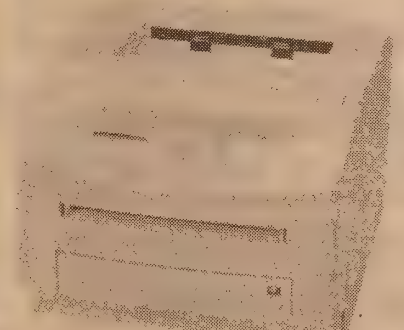

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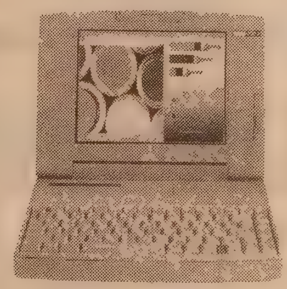

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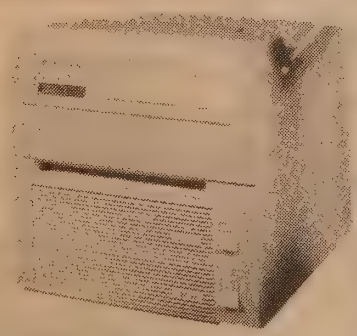

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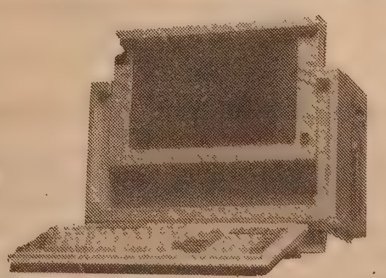

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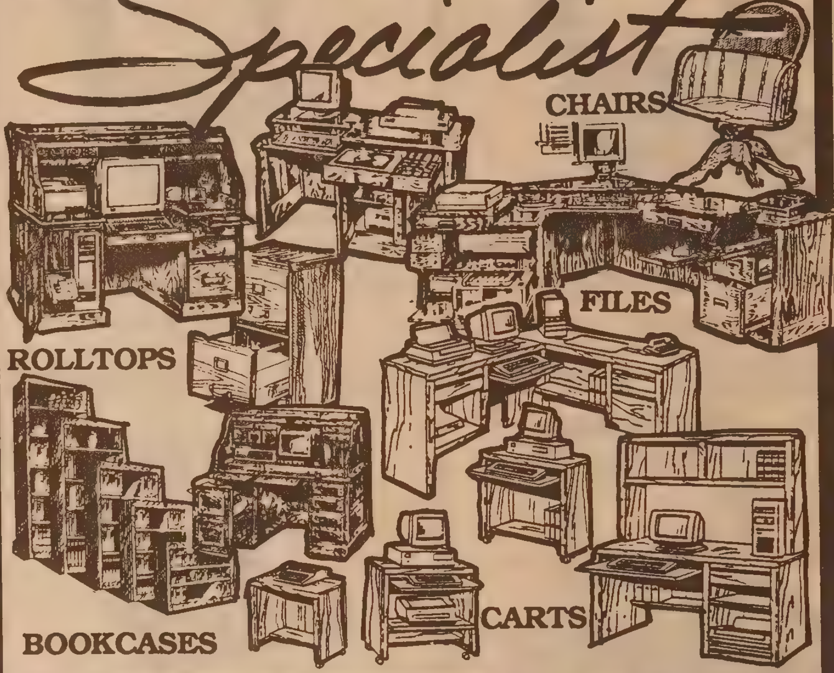

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GETTING THE DISK IN

People sometimes forget to consider the way the disk loads into the drive. Most drives use a special cartridge called a "caddy" that holds a CD and is inserted into the drive. Using caddies can become tedious if you swap disks a lot. You can purchase additional caddies, but that represents an added expense.

On the plus side, a caddy provides protection for the CD when it's not inserted into the drive. Moreover, the new NEC 3X models, which use caddies, allow the drive to be mounted vertically. This may be a factor for Amiga 2000 and 4000 owners who want an internal drive, but like to set the computer case on its side.

The alternatives are top-loading or drawer-type models, which offer greater convenience over caddy-using drives. Note that the drawer-types may cost a little more and be subject to a greater number of mechanical problems.

INSIDE/OUTSIDE

External CD-ROM drives are often internal units mounted in a standard external peripheral box; however, some companies manufacture specific external models with a top-loading case. External models are nice because they are portable and don't tax your computer's power supply, but they do take up additional desktop real estate. If you've got a 5 1/4" drive bay available, I'd suggest going with an internal model, since you'll avoid the cost of the box and power supply.

HOOK ME UP

Physical connection is also important. SCSI uses no less than three different types of connectors. Make sure you know what type of connectors you have when purchasing your drive, so you can get the correct cabling.

SCSI also has a weird thing called termination—there should be a terminator after the last internal and external SCSI devices. This is usually set using resistor packs, a jumper, or a switch right on the drive. For external drives you can use a terminator plug that connects to the pass-thru SCSI port. I like the plugs because I don't have to worry about opening up boxes should I ever need to add or remove SCSI devices. All drives don't have pass-thrus, but this can be added with an adapter.

CD FILE SYSTEM

Once you've got the CD-ROM connected to your Amiga, you need file system software that will allow you to read a CD. (Note: CD-ROM support will reportedly be a part of AmigaDOS 3.1.) Fortunately, there are

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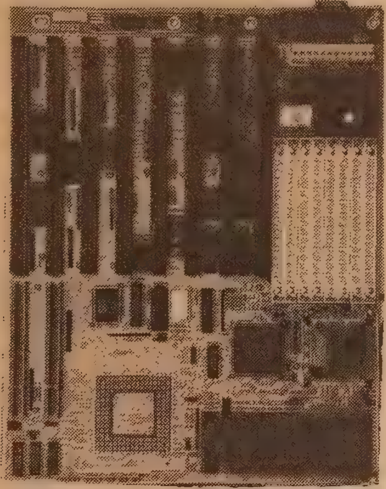

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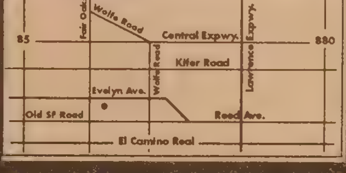

a couple of companies that sell such software. I hooked up my drive using Xetec's CDx software. CDx lets you access a CD just like any other device, in much the same way CrossDOS allows Amigas to read PC floppy disks.

CROSS-PLATFORM ACCESS

All CD-ROMs are capable of reading ISO 9660 disks. Thus, the same CD can be read on an Amiga, PC, or Mac. Of course, you cannot run PC-/Mac-executable programs on your Amiga without some type of platform emulation, but the data files are often very useful. Some disks will specifically state that they are ISO 9660, but many will not. A general rule of thumb is that if the same disk can be read on a PC and Mac, it will probably be in ISO 9660 format.

MORE ON CDx

In addition to ISO 9660, CDx also supports High Sierra, Macintosh HFS, Audio CD, and Photo CD formats. It supports multiple disk players and up to 16 CD-ROM drives on one system. Besides the CD file system software, CDx provides other features like CDTV emulation. While this is of limited value today, I hope they take this to the next logical level and support CD32.

The installation program has many configuration settings, but I left most of them at their default values and it seemed to work fine. The drive I used was an external OEM drive and thus did not appear on the CDx drive listing. However, I knew it was an NEC, so I just randomly selected one of the NEC drives and it worked perfectly.

My only real quibble with the CDx software is that it must reside in the SYS: partition. I would have preferred a flexible assignment, where I could direct the installation to any directory. My SYS: partition is crammed, but I just happened to luck out and have enough room.

If you're using OS2.0+, you can double-click on an audio CD's icon to play (assuming your drive is capable of doing so) or you can have it execute a customizable script. Alternatively you can run the fully featured virtual audio CD player. The player worked very nicely except that its overlapping screen confused my Retina display a little. It provides a graphical representation of all of the standard controls on a CD player, including shuffle play and scanning. I also found a great PD player whose window opened up on the Workbench.

If you like to program in ARexx, there's a slew of example scripts which execute one or more of the many small CLI programs. Generally, this involves control of an audio CD, since CDx already allows you to access a computer CD as a standard device. You could easily design your own virtual player using an authoring program like Helm or CanDo. For "real" programmers, extensive information is provided to allow control over a CD drive in designing programs.

> Many CD-ROMs for Mac and PC will work fine on a CD-ROM-equipped Amiga. Although PC- or Mac-executable programs will generally be useless on an Amiga, disks that contain mostly data files, like PostScript fonts, clip art, graphics, and audio clips can be very valuable to Amiga users.

PhotoCD access is accomplished via a CLI utility that converts a PCD format to IFF. This is not the most elegant implementation, but it does work most of the time. A few PhotoCD images I tried would consistently get colored streaks across the converted image. I found a PD PhotoCD loader for GVP's ImageFX that worked much better.

The informative CDx manual is detailed and supplemented by a ReadMe file. Xetec also includes "Fish & More Volume III," a collection of Fred Fish PD disks 1 to 910. I had a little trouble with a certain icon for a text file making my system hang. I got around this by copying all of the files except this icon file to my hard drive.

CDTV

If you already have a CDTV you don't even need the file-system software. CDTVs read ISO 9660 disks as part of their native capability. So all you need to do is network the CDTV to another Amiga using something like ParNet, or even better, Amiga Link from Spectronics, and access the CD0: partition. You'll also need an external floppy drive to load Workbench.

Transfer speed is abysmal, but it works. The only disk I've ever had trouble accessing in this manner is, again, the Fred Fish disk that comes with CDx. It was basically unusable. With SCSI single-speed drives being discounted to under $150, I wouldn't recommend going out and purchasing a CDTV (even if you could find one). But just in case you have one lying around...

CD32

Two things stand in the way of similarly networking a CD32. One is that it lacks a floppy disk port; two, the serial connector is not Amiga standard. This will change as add-on devices are released for CD32, however. Commodore has indicated that CD32 compatibility will be offered for both the A1200 and A4000, but I'm not holding my breath.

SUMMARY

Adding CD-ROM and the right software, like Xetec's, to your Amiga will allow you to participate in the CD-ROM revolution. For now, this is pretty much limited to archival-type CDs, but what's wrong with having the entire Fred Fish library, or thousands of PostScript fonts, pictures, and clip art at your fingertips? If you're envious of the CD applications and games available on other platforms, go out and buy a CD32. ■

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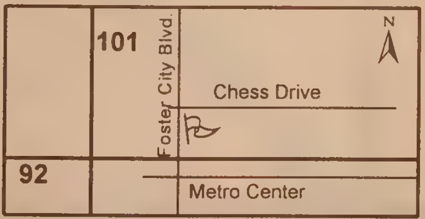

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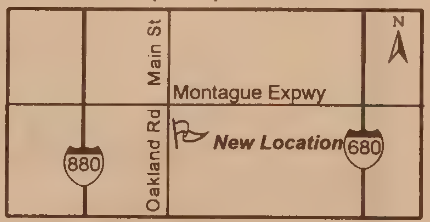

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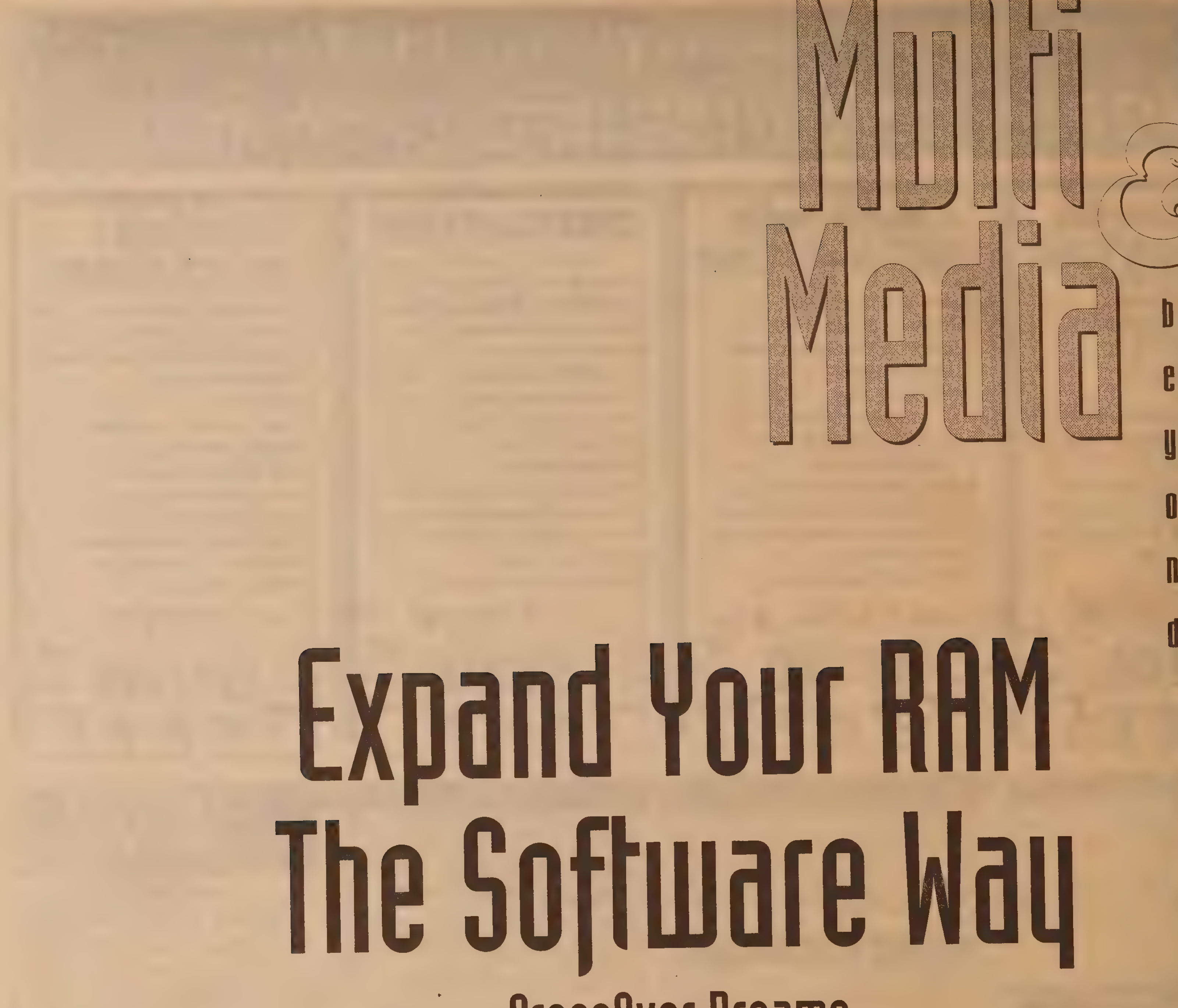

Expand Your RAM The Software Way

CrossOver Dreams

BY TONY REVEAUX

A Macintosh user's dream: upon being informed that you've won the lottery, the first, spontaneous, and uncontrollable emotion that explodes from your consciousness is "Now—at last—I can afford to buy all the memory I need for my Mac!!" Most mid-to-upper range Macs are now rolling off the loading docks with 8MB of RAM installed, where earlier four megs would do. Loaded with the memory demands of System 7, a word processing program like Microsoft Word, and maybe Claris's FileMaker Pro or Aldus/Adobe's PageMaker, you can barely get out the door doing meaningful work not interrupted by that dreaded killjoy dialog box that solemnly intones; "Not Enough Memory!" And, of course, if you are actively engaged in the Mac's main contributions to civilization—desktop publishing and multimedia—then 16MB may be just enough to get you by. The price of SIMMs (memory chips) fluctuates like pork bellies, but for every module of 8MB that you add to your machine, figure about another $290 or so.

A $99 software system extension called RAM Doubler from Connectix will do just what it says. It will double your "effective" RAM. You will see the difference in the About This Macintosh window that unrolls when you click on the Apple on the left of the menu bar. Before, it just listed Built-in Memory, with the icons of each application open at the time, and the graphic bars revealing how much memory is allocated and—in blue—the free memory available for each. With RAM Doubler installed, a second listing adds the Total Memory. If you had 8MB in your computer before, now your new total will be over 16MB.

DOUBLING YOUR FUN

If this sounds like another house call from the Tooth Fairy, just remember not so long ago when compression algorithms like Aladdin Systems' StuffIt first came on the

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Tony Reveaux, a San Francisco-based consultant, writes the "MediaScan" column in Film/TapeWorld. *He can be reached via Usenet (luna@well.sf.ca.us) or MCIMail 290-3008.*

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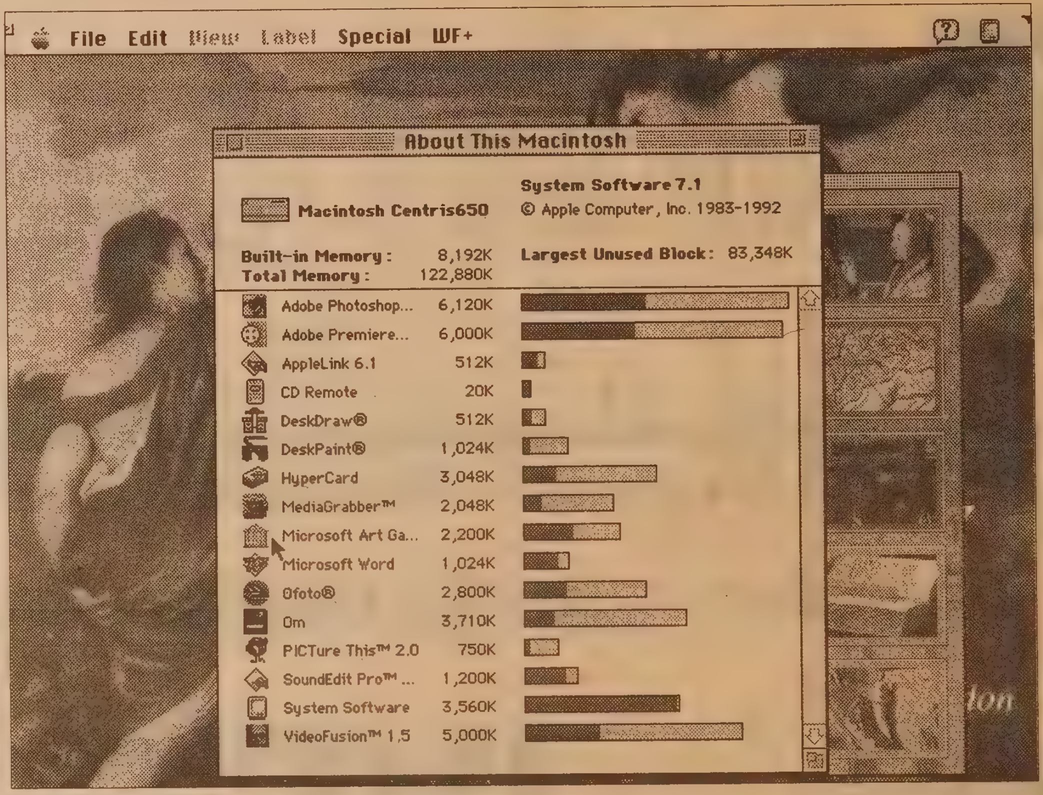
scene. It felt like getting San Francisco real estate at Little Rock prices. Now compressed files are common for software distribution. Compressors hardly put hard disk manufacturers out of business (some vendors discovered other means to do that on their own) any more than software RAM will chill the chip foundries. Like compressors, RAM Doubler moves and redistributes digits in different ways. It raids the free memory that is being hogged by applications that don't feel comfy without max headroom. RAM Doubler exploits the MMU (Memory Management Unit) to poach all those available pages of memory, using the hardware of the CPU so that all those applications think that memory is still there. When they try to access it, and don't find it, then they have to go to RAM Doubler to map something else in its place. Until the memory is actually used, it doesn't really have to be there. When that RAM memory runs out, RAM Doubler reaches over to the hard disk to compress and decompress bits as they are needed. Think of it all as a more Socialist approach to memory management and the egalitarian redistribution of RAM.

The ground floor for RAM Doubler is a Macintosh with 68030 or 68040 microprocessors, System 6.05 or later, and at least 4MB of RAM. Compression algorithms are divided between the "lossless" and the "lossy." A lossless compressor is symmetrical, replacing every data bit that is extracted. An asymmetrical, or lossy compressor, replaces only the bits that are not redundant. Within that paradigm, software RAM expansion is definitely on the lossy side. That is, you cannot always expect the same consistent performance as with an equal amount of built-in, hardware-based RAM. All the more reason to defragment your hard disk often, using Norton Utilities or other tools. Relax—your hard disk isn't literally cracking apart—but data files are written in on tracks of opportunity, and after awhile, a file may be spread all over the platter(s) in hundreds of clusters. Defragmenting rewrites the files so they are more contiguous, taking less time for the seeking and reading of the FAT (file allocation table) by the hard disk controller. You can enhance the performance overhead of RAM Doubler by defragmenting.

I have never experienced a single system crash with RAM Doubler, even after heaping all this abuse on the system. I continue to enjoy the productive freedom of having several applications open at the same time, and to cut and paste between them, such as with Adobe Photoshop, Premiere, Ofoto, and VideoFusion. But developing a large, complex image processing document can still bring the system to its knees just as it did with the original built-in 8MB of RAM on my Centris 650. Nonetheless, for multimedia, and research projects where you must coordinate information from many different documents from several applications, this effective RAM allows you to display them simultaneously without having to quit and open, quit and open. Regardless of how much effective RAM you have added to the system, performance degradation will be a function of what kind of applications you have open and the kind of work you are doing with them.

RAISING THE ROOF WITH MAXRAM

MaxRAM 1.0, Spencer Low's $5 shareware utility, available from his LowTek Creations or from BBSes and user groups, gives you an inside track to expanding your RAM even further. You must already have RAM Doubler installed. MaxRAM reads your system to find out what your built-in RAM is, and bases its expansion scale of nine ratio buttons thusly. If your RAM is 8MB, click on the lower one and your effective RAM will be 16; with the top button, 48MB. Neat.



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Macintosh Centris650          System Software 7.1
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Built-in Memory :   8,192K    Largest Unused Block:  83,348K
Total Memory :    122,880K

Adobe Photoshop...    6,120K
Adobe Premiere...     6,000K
AppleLink 6.1           512K
CD Remote                20K
DeskDraw®               512K
DeskPaint®            1,024K
HyperCard             3,048K
MediaGrabber™         2,048K
Microsoft Art Ga...   2,200K
Microsoft Word        1,024K
Ofoto®                2,800K
Om                    3,710K
PICTure This™ 2.0       750K
SoundEdit Pro™ ...    1,200K
System Software       3,560K
VideoFusion™ 1.5      5,000K
```

"The sky's the limit to effective RAM when you hack it with ResEdit through RAM Doubler, as seen here with Microsoft Art Gallery on CD-ROM, the open application."

"MaxRAM?" said Jorg Brown, senior software engineer and the project lead for RAM Doubler at Connectix. "It forces RAM Doubler to give even more memory than it would like to. The problem is that if you actually start using all that memory, there's no way that RAM Doubler can actually accommodate all the requests without actually starting to use the hard drive. People don't mind going 5% or 10% slower to get twice as much RAM but in our experience people do mind going 75% or 80% slower to get five times as much RAM."

DEEP TWEAK IN RESEDIT

To boost even more megs of RAM than available through RAM Doubler/MaxRAM, you'll have to tunnel into RAM Doubler through Apple's ResEdit. A hack known as RAM Tripler allows you to do what MaxRAM does, and then some. From ResEdit, you reach in directly to the resources of the application that MaxRAM does with its template. Open up RAM Doubler and go to the resource "prefs." Find the field designated "multiplication factor" and look

RESOURCES:

BMUG
1442A Walnut St., #62
Berkeley, CA 94709
(510)549-2684

Connectix
2600 Campus Dr.
San Mateo, CA
94403
1-800-950-5880

LowTek Creations
130 Windward Ct.
Vallejo, CA 94591

Peachpit Press
2414 Sixth St.
Berkeley, CA 94710
1-800-283-9444

Hayden Books
11711 N. College Ave.
Carmel, IN 46032
1-800-428-5331

for the number string with zeros and the number 2. This is RAM Doubler's multiplier. If you change that multiplier number 2 to a 3, save and reinstall, then you will have a total memory of three times your built-in RAM. Replace the 2 with a 9, and it will be 9 times the RAM. Replace the 2 with an F (Function or Fantasy—take your pick) then it rockets the RAM to the effective memory ceiling of the CPU, which in my Centris 650 is a factor of about 15 times. So, there it floats—over 122MB of RAM! Is that equal to over $4000 worth of chips? Only in the Fantasy mode. Performance degradation is progressive and accumulative. But, hey, in the universe of the Desktop, it's the Yellow Brick Road with Tara at the end.

A software system extension called RAM Doubler from Connectix will do just what it says. It will double your "effective" RAM.

ResEdit is Apple's own resource editor utility. The resources are the cornerstones and the pillars in the foundation of the Macintosh system. One of the best places to get ResEdit and also "get it" at the same time is on the disk that comes with the book *Zen and the Art of Resource Editing: The BMUG Guide to ResEdit, Third Edition* by Derrick Schneider, Hans Hansen, and Noah Potkin (Peachpit Press, 1992, 220 pp., $24.95). Developed from ever-helpful BMUG (Berkeley Macintosh Users' Group), it will introduce you and lead you through the ins and outs of ResEdit so that you can take control of the myriad of digital valves, switches, handles, spigots, and levers in the subatomic piping of the Macintosh system. To go even deeper into the corridors of the system basement, there is also the "Zen ROM," an $18 CD-ROM available from BMUG loaded with "megs and megs of resources."

FROM THE MACINTOSH UNDERGROUND

To cite from another neat new primal Mac book, *Guide to the Macintosh Underground: Mac Culture From the Inside* by Bob LeVitus and Michael Fraase (Hayden Books, 1993, 228 pp., $19.95), quoth Bob; "Real Mac users don't fear ResEdit; neither should you." And then he goes on to recommend the BMUG book. Guide is a wonderfully weird and wacky insiders' history of the warm, strange trip of the evolution of Planet Macintosh. Read this and you will be able to saunter into a BMUG meeting

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replete with the lore and jargon of a MacHead who has been "in country."

Through ResEdit you can customize cursors, menus, commands, FKeys, dialog boxes, sounds, patterns—everything short of your DNA. I can type away with more abandon now that I used ResEdit to change a couple of annoyances in the keyboard layout. I disabled the Caps Lock since it gets bumped by accident so often. Then I replaced the ">" with a period so that I can type "P.O. Box" without shifting up and down like a Canadian zip code. Other modifications in icons and menus were just for the hack of it.

DOUBLE, DOUBLE, RAM'S NO TROUBLE

I asked Jorg Brown if RAM Doubler's functions could be incorporated into the Mac at the system level. "Apple actually could," said Brown, "and there has occasionally been discussion of them licensing it. Its just a matter that they haven't come up with it yet, and it would be difficult for them to do that without infringing on our patents at this time." Now Connectix is working on the native PowerPC version of RAM Doubler. Said Brown, "On machines like the IIcx and the IIci the compression part of RAM Doubler doesn't run very quickly, and, as a result, once you get close to the 2X barrier, once RAM Doubler can't accomplish what it's doing just by stealing free memory from applications, you start seeing the performance hit a lot sooner. By the time you move up to a machine like the Mac 840AV, the compression hit is so small that you can go all the way to start using disk, without feeling a performance hit that much. On a PowerPC, the compression is so very quick, that it's hard to know that anything's going on. On a IIcx we can compress about 150K to 200K/second; on the PowerPC we can compress about 1.5MB to 2MB/second, and it makes a huge difference in terms of whether or not you perceive a performance hit."

> A hack known as RAM Tripler allows you to do what MaxRAM does, and then some.

ART TECO '94

If you think ResEdit is fun, then you won't want to miss Art Teco '94, a three-day technical conference that will bring together the biggest names in the multimedia industry, and will focus on all aspects of interactive content development, from concept to authoring to marketing and distribution. Created by Morph's Outpost on the Digital Frontier, that Oakland-based wired-up tabloid for multimedia surfers, the conference will process from June 16–18, bit-addressed at Fort Mason in San Francisco. Call (510)238-4545. ■

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Continued from page 270

and end of a clip to make sure you get all of it gets old fast. VTK Plug in Pack lets you eliminate the remote control by moving it into Premiere.

VTK uses the same external device control capability in Video Toolkit. It can control just about any camcorder or VTR, whether consumer or professional. The package includes the software, manual, and one cable of your choice (different camcorders or VTRs need different cables). Installation is simple and only takes a couple of minutes.

Once installed, you use the device control option in Preferences in Premiere to set up VTK for your video device. You'll find that your Movie Capture window now has machine control buttons. The buttons will vary depending on the device you use, but in general you'll find that you can shuttle the tape, set log in and out points on the fly, create a batch list on the fly, and have time code displayed. VTK even handles the pre-roll for you to insure accurate in-points.

The VTK Plug in Pack is the least expensive way to add machine control to Premiere. It's a great time saver when you need to digitize lots of footage, and easily worth the purchase price. (Abbate Video, 14 Ross Ave., Floor 3, Millis, MA 02054)

Amiga Software Reviews

CANDO 2.5

Published By: INOVAtronics, Inc.
List Price: $199.95
Reviewed By: Douglas J. Nakakihara

CanDo 2.5, INOVAtronics' latest release of its authoring program, includes some badly needed upgrades like support for AGA display modes. This new version also supports public screens, so you can now bring up a CanDo window on another application's screen.

It should be music to your ears to learn that CanDo can now play and control all of the popular "tracker" music module formats. Font capabilities have been improved with the ability to use Compugraphic and color fonts. The new layout editor tool helps you to flow text around graphics—basically, allowing you to draw an outline of where you want the text to flow.

Several new script commands and functions have been added including support for ASL file and customizable "OK-Cancel-type" requestors. The new Supermover tool provides a more convenient way to move multiple objects in one step, although there are still no page wipes in this version.

The interface has been refined, giving CanDo a much more professional look. The thick and detailed manual is still v2.0, with 2.5 changes listed in an AmigaGuide file. Beginning with this release you can no longer make run-time modules. However, a free deck browser is available for public domain and shareware projects. Commercial developers will have to pay a licensing fee of $50 to $200.

If you aren't a programmer, CanDo will help you create slick professional-looking programs while keeping traditional programming chores to a minimum. (INOVAtronics, Inc., 8499 Greenville Ave., Suite 209B, Dallas, TX 75231. 214/340-4991)

DINER OBJECTS FOR LIGHTWAVE

Published By: Terra Nova Development
List Price: $65
Reviewed By: Douglas J. Nakakihara

Well, Brad Schenck has done it again. Previously only available in Imagine format, Mr. Schenck has released his Diner object set for use with Lightwave. If you are not familiar with this set, it is an impressive collection of objects which make up a complete 1950s-style diner.

Many of the objects are available in low-res and hi-res versions. The difference being that the low-res objects have less detail, but render quicker and require less RAM. These objects should be used when they are in the background and maximum detail is not necessary.

Schenck also includes five example scenes involving different locations and angles inside the diner. The scenes vary in RAM requirements, one requiring 13MB of RAM to render. A frame from this scene took eight hours to render on an A4000 in medium resolution overscan using raytracing and trace shadows, with low antialiasing. Of course, rendering time can be reduced using the usual tricks; however, raytracing is nearly mandatory for objects with chrome surfacing.

All of the files can be installed from the Workbench, by dragging the install icon to where the VideoToaster software resides. With a simple double-click, all of the objects, image maps, and scene files are copied to the appropriate subdirectories.

The diner is absolutely stunning. Even if you don't require objects from this era, Schenck's work is something any 3-D artist can appreciate and admire. (Terra Nova Development, PO Box 2202, Ventura, CA 93002-2202)

EDGE

Published By: INOVAtronics, Inc.
List Price: $99.95
Reviewed By: Douglas J. Nakakihara

Edge is a new text editor from INOVAtronics. In addition to all of the basic text editing features you'd expect, Edge offers unlimited open files and file windows capabilities. It offers extensive screen and window control. The ASL file requestor is supported, but the built-in requestor provides more features and the unique "Edge:" device further simplifies file loading. Sections of text can be hidden using the "fold" feature. The search function can locate non-printable characters and includes special features for programmers, like function and matching bracket find (C comments /* */ are surprisingly missing though). Undo (with definable buffer), redo, bookmarks, upper and lower casing, columnar block editing, wordwrap, programmable header and footer, autosave, and auto-numbering back file system are also featured. You can also cut-and-paste text from a Shell. Document-specific local preferences are saved in a file's project icon.

Menus, keystrokes, prompts, etc. are all definable via configuration files editable from within Edge. However, its refreshing adherance to standardized keystrokes makes this unnecessary. To encourage CED users to switch, a CED-emulating configuration file is forthcoming.

ARexx is supported with automatic script recording. Extensive context-sensitive online help is featured. I've run out of room, but suffice it to say, Edge is full featured. Whether it's for editing a batch file or ARexx script, a text editor is a necessity and a good one is a blessing. Stop fumbling through life using AmigaDOS's ED, Edge will save you time and frustration. (INOVAtronics, Inc., 8499 Greenville Ave., Suite 209B, Dallas, TX 75231. 214/340-4991) ■

Save Money And Energy

Bright Ideas For Safe And Efficient Computing

BY KEVIN SAVETZ

In the face of the growing awareness of energy and environmental conservation, it may seem as though your office generates an endless stream of waste paper, consumes growing amounts of energy, and throws away unmanageable quantities of office accessories, such as toner cartridges.

Whether at your workplace or home office, it requires only a few simple changes to help the environment and save money. With a little thought and pre-planning, your computer—and the way you use it—can save energy, time, and hassles.

Keeping in mind how you use power, paper, toner, and other resources, the following tips can make your computer—and your office—more eco-friendly and energy-conserving.

USE PAPER WISELY

It's easy to save paper and money when printing and photocopying. Reuse the blank back side of botched copies and printouts when you print out drafts. This can cut your paper consumption by up to half. Spellcheck and proofread your work on-screen before you print. If you use cloth ribbons in your dot-matrix printer, have them re-inked instead of replaced. It's cheaper and the printouts look better. Recycle toner cartridges from your laser printer and photocopier. Recycled carts cost half of new ones, and save landfill space. Buy recycled paper, envelopes, and labels.

Check what you are really getting before you buy recycled paper for your printer or photocopier. Not all papers in a "recycled" product line are actually made from recycled paper—some bright white and colored papers are made with virgin pulp. To be truly eco-friendly, find paper with a high percentage of "post-consumer waste," waste that has been used and recycled. "Pre-consumer waste" may mean virgin scrap—unused paper and wood left over from another manufacturing process.

Despite the fact that the computers let us edit documents on-screen before printing the final version, few people do that. Instead, we print each draft and revision, wasting toner and paper. A software product for the Macintosh called Toner Tuner, from Working Software, Inc. (408/423-5696), lets you print "light" but readable versions of your rough drafts, saving toner and money, and (hopefully) slowing the flood of used ink cartridges to the landfills. It works on most PostScript and non-PostScript printers.

Tired of Post-it notes and memos covering your desk? If the computers in your office aren't linked via a network, now is the time to do it. It will allow office workers to use electronic mail for inter-office correspondence, which again will save time, paper, and money. In 1992, American offices generated more than 775 billion pages of paper—that equals 14 million tons of paper, or 238 million trees.

Instead of taking the time to print a letter then loading an envelope into the printer to print the address on it, consider using "windowed envelopes," which feature a hole though which (after you fold your letter) you can see the address. This saves the step of printing on the envelope, but it will take some trial and error to get the address to show through the window. Use envelopes with "empty" windows rather than clear plastic or cellophane covering, which can't be recycled.

SAVING ENERGY

More than forty million IBM-compatible computers are used by businesses each day in America. These, plus seven million laser printers, consume 18.2 billion kilowatt-hours of electricity per year. But the Environmental Protection Agency says that computers are actively used only about 20% of the time they are powered on.

Do you leave your computer equipment on at night? If you do, you should consider taking the time to power down your machines before going home. The useful life of your hardware will be increased if you keep it off when you're away for long periods of time. For instance, hard disk drives are rated with a "mean time before failure"—or the average amount of time it will run before something goes wrong. Hard drives spin even when you're not using them—by turning the computer off, you extend the active life of the components and save energy.

The same is true for laser printers and monitors—they consume lots of energy even when idle, so turn them off at night. On the other hand, computers generate heat—several in one room generate lots of it. Use this to your advantage when it's cold and keep the thermostat set low.

Does your computer sleep on the job? Nine computer makers, including IBM, Apple, and Hewlett Packard, are planning or have produced desktop computers that save energy by going into "sleep" mode when not in use. This is expected to cut computers' power consumption by half. "Sleep" modes became popular on laptop and notebook computers to conserve the batteries' power. A "sleeping" computer can be brought to full waking state—right where you left off, without the need to reboot—at the touch of a key.

POWER TRIPS

Unplugging your hardware from the power and phone lines during electrical storms or any time when the electrical system is stressed is the safest method—for instance, in the summer (when many air conditioners are in use) or when a heavy electric motor is plugged in nearby.

continued on page 333

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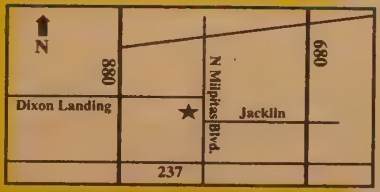

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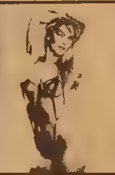

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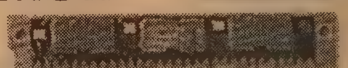

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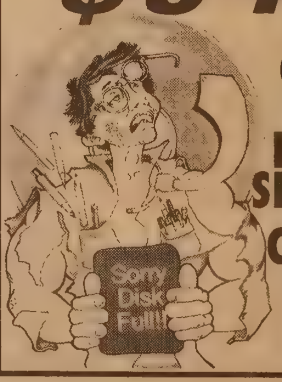

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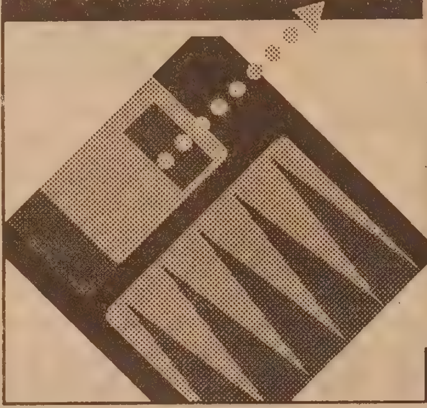

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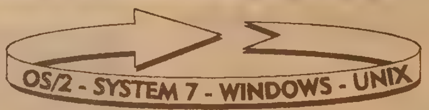

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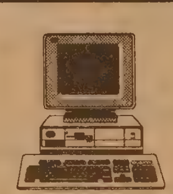

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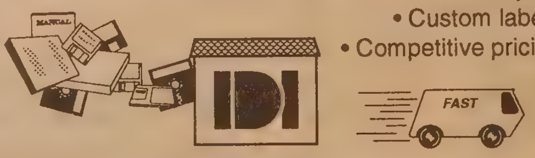

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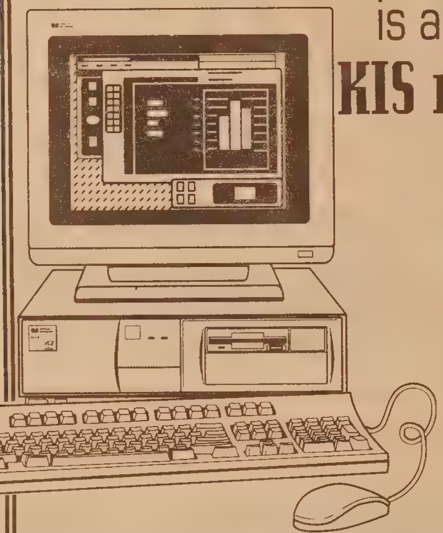

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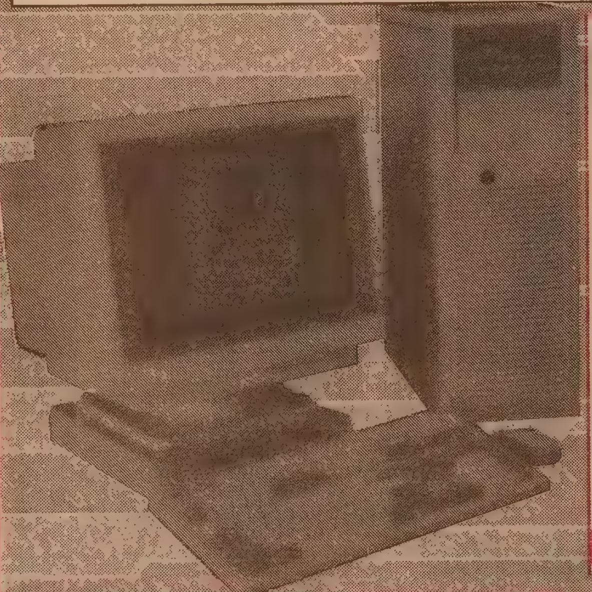

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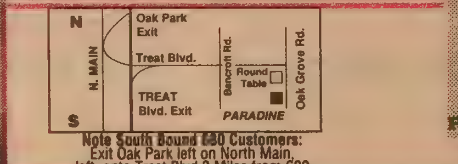

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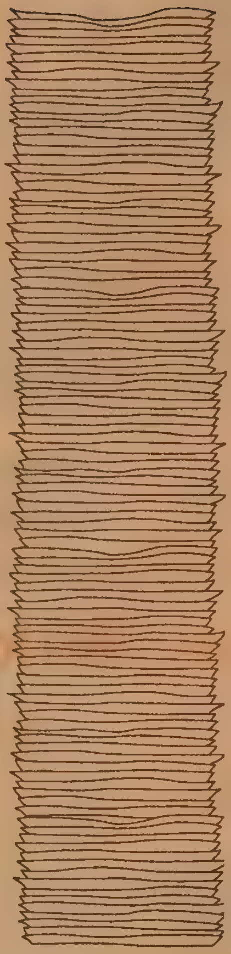

continued from page 318

To assure your computer equipment remains in tip-top shape, never plug any of it directly into the wall socket. Sometimes electrical power can be "dirty," meaning power surges, dropouts, and electrical spikes interrupt the regular flow of electricity to your computer. Instead, use a surge protector, a relatively inexpensive device that sits between your computer and the wall. A regulator helps remove power dips and spikes, and a fuse will protect your equipment from extreme power surges (which can be caused, for example, by a nearby lightning strike). Unprotected power "spikes" can reduce computer equipment to a smoldering paper weight. It's a small price to pay for a safer computer.

It's equally important to plug modems and fax machines into protected phone line plugs. A bolt of lightning can hit a telephone line, sending an unfortunate number of volts down the wire, frying your telephones, modems, and fax machines.

Although surge protectors work wonders to limit the effects of power spikes on your hardware, they can't help you when the power goes out. "Brownouts" (brief power drop-outs) and "blackouts" (longer periods of powerlessness) cause computers to shut down—and all your unsaved work disappears forever. If this is a problem in your area, consider an uninterruptable power supply (UPS), a device that switches your computer to battery backup should the power fail. Inexpensive ones (from $200) will give you enough continuous power to save your work and shut down; more expensive ones can keep you online for hours.

All electrical outlets deliver a specific wattage of electricity. Typical wall outlets deliver 1800 watts. Although you may be able to plug a dozen electrical appliances and computers into a single outlet using extension cords or surge protectors, be sure you don't exert a wattage demand higher than that circuit can handle. One computer alone (without monitor, printer, etc.) can use 100 to 250 watts of power. If you go overboard, a fuse or circuit breaker may blow.

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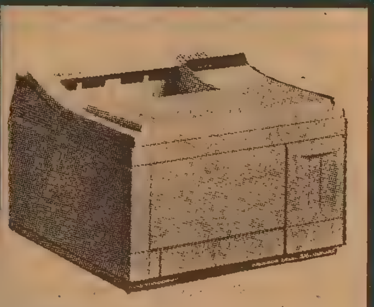

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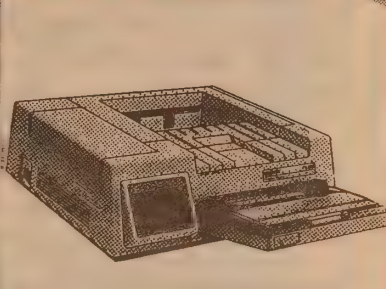

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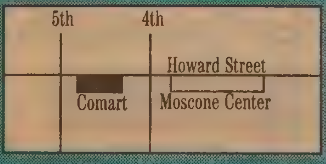

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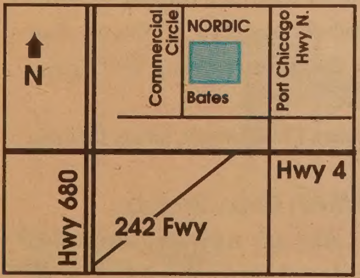

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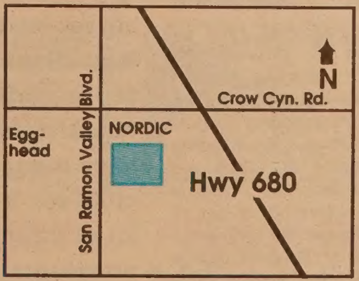

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Letting The In-Basket Out

Or

What I Do During The Slow Time Of Year: Read Mail

BY JOHN C. DVORAK

Not a lot is going on in the computer industry. This forces me to dig into my famous in-basket to see what news and letters have arrived. These are things I should be writing about, but who has time? I mean, there is just too much to do online nowadays.

DVORAK'S LAST COLUMN

So what's with this University of Washington announcement about a new faster computer system using the new Texas Instruments MVP microchip that lets personal computers be used for video conferencing, movies-on-demand, and interactive games? The thing is called the MediaStation 5000 and it can process a video image in 19 millionths of a second, 20 to 100 times faster than standard 486. AND it makes images five times sharper than the standard television. I combine this information with the wacky Texas Instruments technology called DMD—the digital micromirror device which will replace all projection TV systems by the year 1996 (or so I'm told). These are dinky mirrors on silicon that can make flat-panel wall-sized TV sets a reality. These are weird technologies. I can only conclude that Texas Instruments has captured an alien (obviously an engineer) and exerted force on the alien (or even paid money) to get these designs. Will someone look into this for me?

Copyright © 1994 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

My Favorite Story. According to the online news services, a local computer vandal pulled an amusing stunt on a guy who rented a billboard to express his need for a girlfriend. The vandal got into the guy's phone mail box and made his outgoing message into some X-rated disgusting tome. Does anyone other than me find this hilarious?

Miscellaneous Item Number One. So I see this article that says "IBM Unveiling New Mainframes." I see that the old-timers have managed to retake the company mind-set. It sure must be annoying that a lot of these new mainframes use microprocessors. Of course the margins aren't there any more and Gerstner is saying the company blew it by not going into client-server computing earlier.

Try this Product Dept. I got email concerning a piece I wrote in *PC Magazine.* It comes from Irv Thomae.

*"The paragraphs in your most recent 'Inside Track' headed 'DOS-is-dead-dept.' struck a chord for me. Like Mike Cuthbertson, I've written an application which delivers real value to DOS users—but it's been hard to find willing distribution channels. 'SizeIt' makes new printers' proportional fonts easy to use with (older) text applications that don't support them. LaserJet 4 (and LaserJet-III compatible) printers include a nice assortment of built-in, scalable typefaces, most of which are *proportional*. Almost all word-processor packages support them, so professional-looking correspondence has become commonplace. Most accounting and database applications, however, support only fixed-pitch output. After a couple of attempts to use 'Times' to print reports from apps built with Paradox, dBASE, Clipper, etc., most users resign themselves to Courier.*

"SizeIt combines menu-based setup functions with automatic print-position adjustments, so that the user can select any size of any typeface, and just 'Go.' If a fixed-pitch-only application can 'print to file,' SizeIt will let its users get full value from modern printers, without tedious reformatting. It's a character-mode DOS utility, but it also supports 'drag-and-drop' printing of OS/2 plain text. We've been selling SizeIt direct for $49.95 plus shipping. We get great feedback from our customers, but it's hard to get distribution—apparently because we've solved a problem for which most people have given up hope of finding a simple solution. Irv Thomae Succinct Systems, Inc. (802)-649-5144, (800)-639-3711."

When you talk to software buyers at computer stores nowadays they'll tell you that they seldom consider buying DOS programs anymore.

Internet Humor: This comes from Dennis Ritchie:

Subject: Re: When's Unix's Birthday
>Looks like folks are now beginning to
>credit the development of UNIX to
>Kernighan and Ritchie, but I thought the
>principal investigators were *Thompson*
>and Ritchie. Did something change?

The differences between Kernighan Ritchie Thompson are real but very subtle. We all look alike (middle aged with scruffy graying beards). Note these distinctions:

>— Kernighan is slimmest, Ritchie middlest, Thompson heaviest in body build

>— Ritchie got contacts a couple of years ago and so is the only current non-glasses wearer

>— Thompson wouldn't touch netnews with a pole, Kernighan secretly gets misc.invest and misc.taxes mailed to him, Ritchie reads it more than is good for him and occasionally contributes

>— Ritchie is the only one who has met five people who have appeared on David Letterman (Penn, Teller, Rob Pike, Mayor Koch, and the guy who raised the biggest hog in Ohio)

>— Kernighan has written ten times as much readable prose as has Ritchie, Ritchie ten times as much as Thompson. It's tempting to say that the reverse proportions hold for code, but in fact Kernighan and Ritchie are more nearly tied and Thompson wipes us both out.

And finally, here's a column that was never written:

Title: What Do They DO, Anyway?

When you visit a software company or a computer maker you invariably make your way through the marketing department. Sometimes there is one person in charge of marketing. Sometimes there are a hundred. You have to wonder what these people actually do all day.

With rare exceptions most of the people working in marketing or advertising within a small computer company are trained on-the-job. I can't tell you how many PR women, for example, tell me that their goal is to become a marketing director at some computer company. Exactly why they think they're qualified was always beyond me until I met some of the marketing people. Then you see that their desires stem from an easily acquired "Hey, *anyone* can do better than that!" attitude.

Luckily there are a lot of studies that are done which provide the critical information...you can tell how well people are doing by comparing what they *should* be doing with what they actually do. ■

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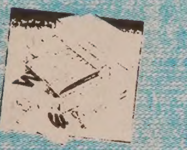

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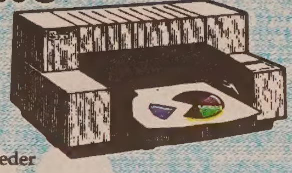

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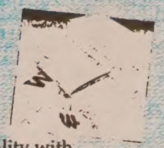

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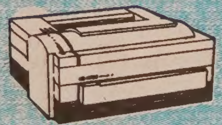

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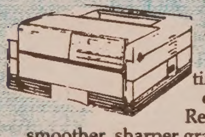

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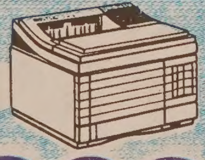

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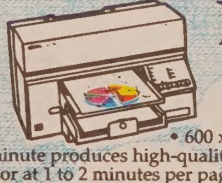

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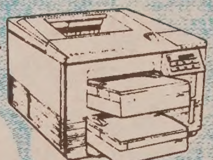

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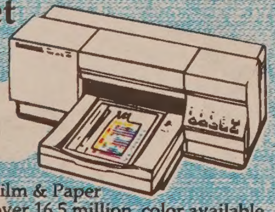

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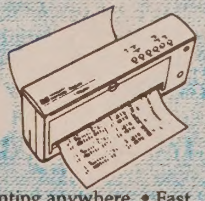

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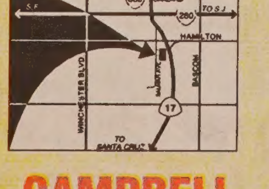

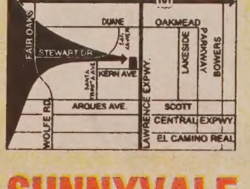

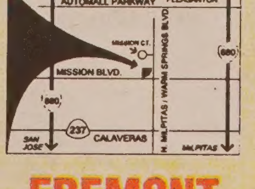

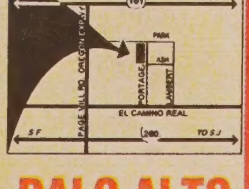

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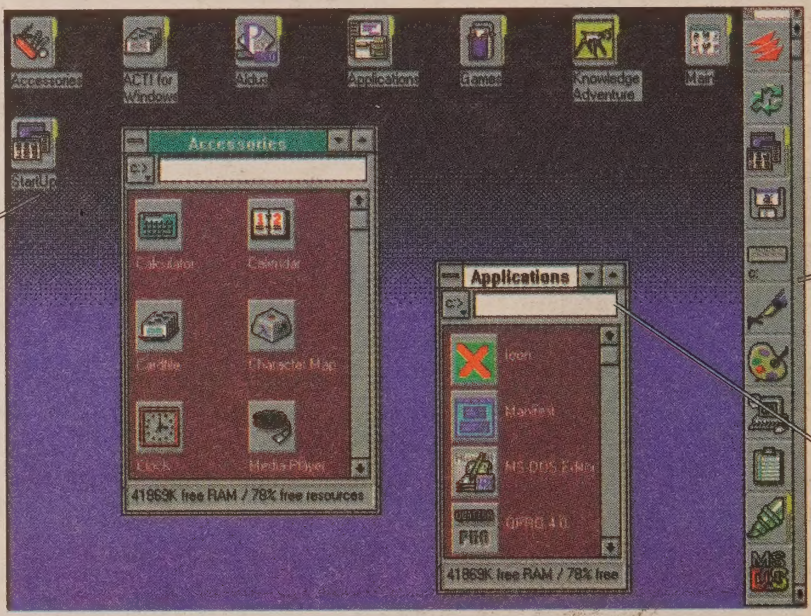
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Simply drag and drop files to copy, move or print them.

Now opening, copying, moving, deleting, renaming and printing are intuitive.

Speed up the way you work by customizing SideBar to conserve desktop space.

Sometimes prefer to key-in DOS commands? The command line's always there.

SideBar is the efficient desktop for Windows—a small, fast shell that automatically creates objects that make it simpler to manage applications, documents, folders, drives, TSRs, printers, etc. All you need to do is point and click.

SideBar simply makes Windows more 'windows-like.' And that makes your work go quicker and easier. It's an idea incorporated in Microsoft Office, but we've taken it to its obvious conclusion.

SideBar makes MS Windows a better place to work.

Quarterdeck

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